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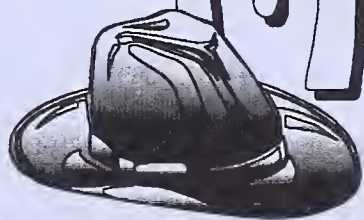
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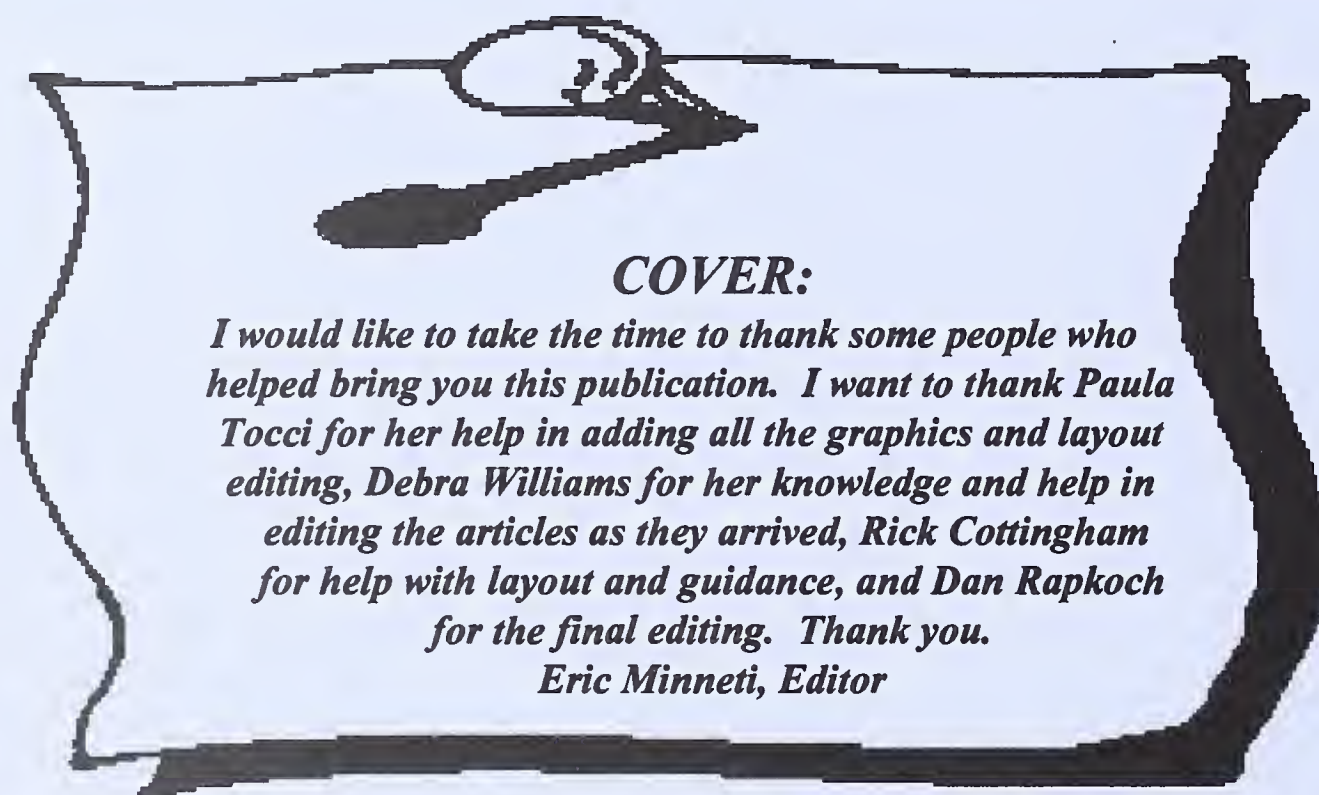
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Clearwater

This publication welcomes articles of interest and random pieces of information on water and wastewater treatment. If you have ideas or information you would like to share with other people involved in the water or wastewater field, please contact the Department of Environmental Quality.

An article may consist of your thoughts and ideas about something you may have experienced or such information that could help someone else in their day-to-day work. It could also be a technical article developed from research information and library resource material. If it has to do with these topics and you think it may be of interest, please send it to us (Attention: Clearwater Editor), or give Bill Bahr at 444-5337 or Eric Minneti at 444-4769.

If you do not wish to continue receiving this publication, please send us your mailing label so we may remove it from our mailing list. Thanks!



The Big Sky Clearwater is for water and wastewater operators across Montana. It is published twice a year by the Permitting & Compliance, and Planning, Prevention & Assistance Divisions of the Montana Department of Environmental Quality in cooperation with the Montana Section of the American Water Works Association and the Montana Water Environment Association.

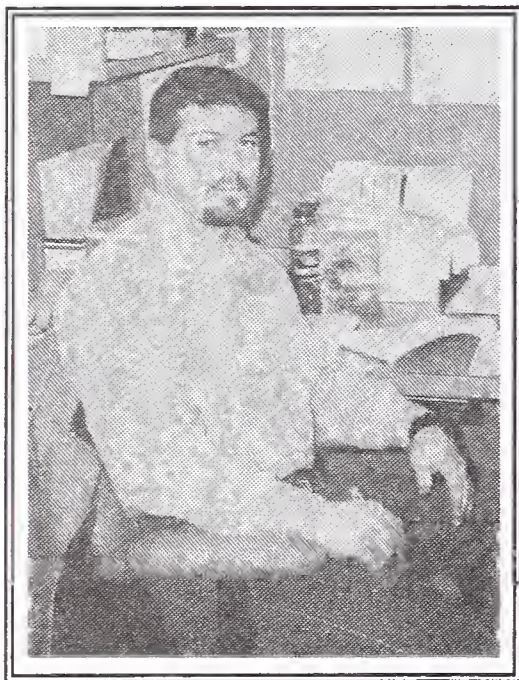
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IRON IN MONTANA GROUNDWATER

by Eric Minneti
Water Quality Specialist

Many Montanans that use well water have seen rust colored water running out of their sink faucets and filling bath tubs. Sometimes you just have to run the water a few minutes to clear it up, but what is it? Why is it there? Can I get rid of it before it ruins things?

Iron in Groundwater

These are frequently asked questions and, if you are an operator of a well water system, you probably have been asked them one too many times. In Montana, the problem, iron and iron bacteria in groundwater systems, is statewide with major concentrations in the Eastern and Central parts of the state. The Environmental Protection Agency (EPA) has set a secondary MCL of 0.3mg/L for iron in drinking water. If you have a well with high iron concentrations, chances are you soon could have an iron bacteria problem. Dissolved iron and iron bacteria are directly related. First, let's look at where iron in groundwater comes from. Iron, along with other minerals such as manganese, are very common in rocks and sediments that make up many aquifers. Groundwater tends to reflect characteristics of the aquifer confining it. Many types of rocks in Montana, such as sandstone, shales, granite, and coal beds, contain iron-rich minerals which are easily soluble. Iron carbonate, iron sulfide, and iron oxide are among the common minerals that control iron levels. However, mineral sources of iron are not the only constituents for having high iron levels in a groundwater source. The chemical make-up of the groundwater plays an effective role on iron concentrations. Dissolved oxygen and pH levels greatly influence iron concentrations in groundwater. Most groundwater is low in dissolved oxygen and near neutral pH. Under these conditions, with soluble iron minerals present or dissolved, Ferrous (iron in the reduced state) concentrations amazingly can reach 5.0mg/L. Compared to EPA standards of 0.3mg/L, this is a strikingly high concentration. Iron in a reduced state means that it is dissolved in the water supply as well as being colorless and basically invisible. When the groundwater (containing the reduced iron and relatively low D.O. with neutral pH levels) is pumped into an oxygen rich environment like sinks, toilets, and cisterns, the reduced iron (ferrous) is oxidized to ferric iron. The ferric iron is almost insoluble and forms a yellow or red-brown colored precipitate that attaches to porcelain, piping, faucets, and other household fixtures.

In table #1 you will see some formations found in Montana and how susceptible they are to iron concentrations. Most iron-rich areas are found on the Montana great plains and volcanic deposits in the more mountainous regions of Montana. Figure #1 (from The Groundwater Information Center) shows dissolved iron concentrations at the MCL of 0.3mg/L and also higher concentrations of 3.0mg/L. If your well is located anywhere near these sources, then you may have a high concentration of iron, possibly causing iron bacteria.

Figure 1. Dissolved iron concentrations in Montana groundwater. Large circles indicate samples with very high iron (3.0 mg/L or more); small circles have

high iron (0.3 mg/L or more), the EPA secondary limit. Source: Ground Water Information Center.

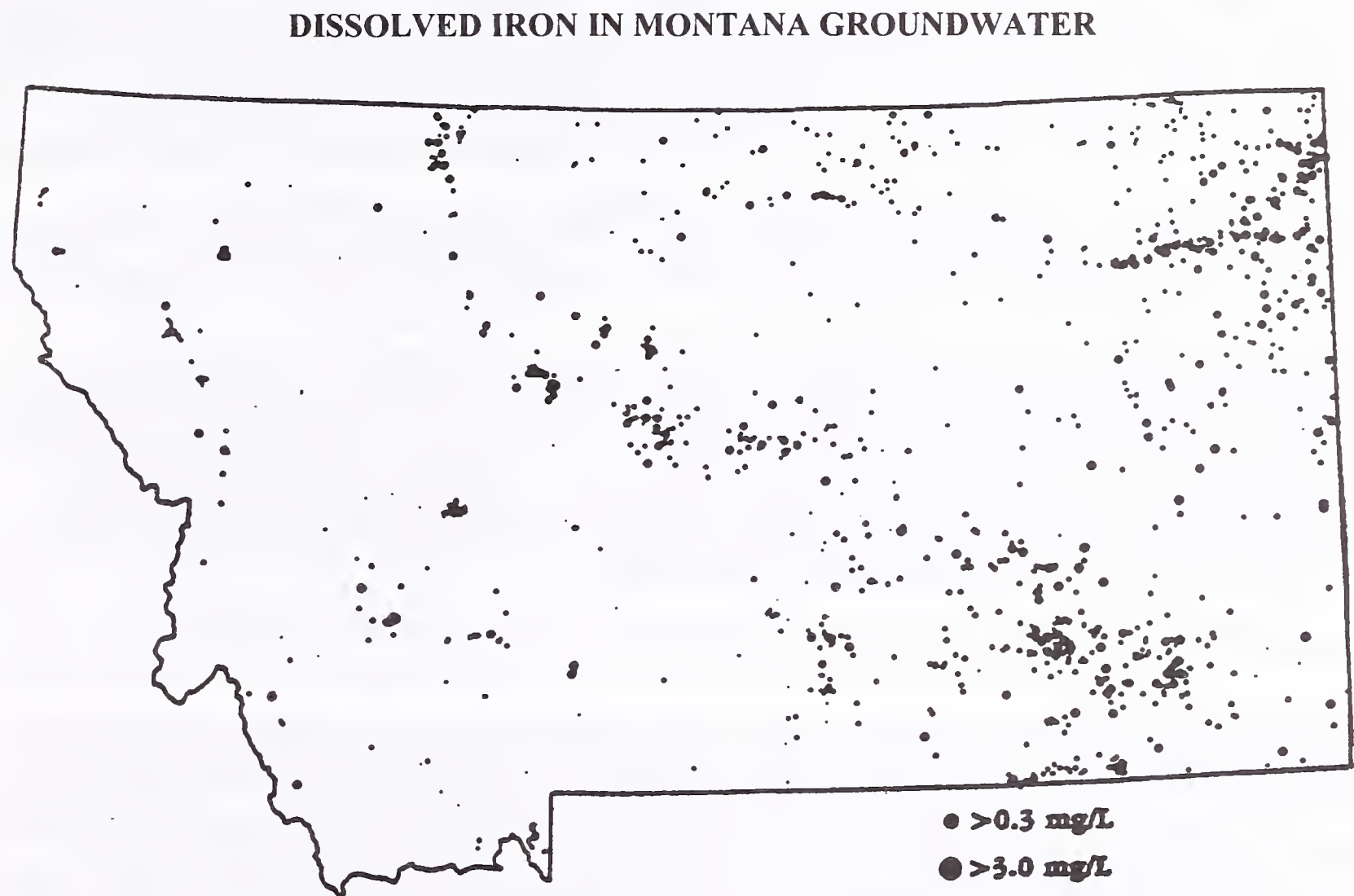


Table 1. Categories of susceptibility to high iron concentrations in some common Montana aquifers.

Category	Susceptibility to Iron Problems	Aquifer Name (Geologic Age, Million Years)
A	High	Glacial aquifers (Pleistocene, 0.01-2) Alluvial aquifers (Cenozoic, 0-63)
B	Moderate	Fort Union formation (Tertiary, 2-63) Judith River formation (Cretaceous, 63-138) Eagle formation (Cretaceous, 63-138) Kootenai formation (Cretaceous, 63-138)
C	Low	Hell Creek formation (Cretaceous, 63-138) Fox Hills formation (Cretaceous, 63-138) Swift formation (Jurassic, 138-205) Ellis group (Jurassic, 138-205) Amsden group (Mississippian, 330-360) Big Snowy group (Mississippian, 330-360) Madison group (Mississippian, 330-360)

Iron Bacteria

Iron bacteria is a water-borne bacteria that thrives in water with iron concentrations of 0.2mg/L or greater. The four most common species of iron bacteria are: Sphaerotilus, Leptothrix, Crenothrix, and Gallionella. These bacteria are red-brown in color, grow in layers, and have a slimy sheath around their active outer surface. The rust iron color of these bacteria is in part from the hydroxide or iron precipitates incorporated into the sheath. This coating of slime and precipitates helps resist attack of many disinfectants used to clean water. These bacteria attach themselves to the iron material on pumps, motors, casings, etc. Iron bacteria do not pose a health hazard, but can eventually hamper or stop production of a well. They commonly plug up pumps or well intakes by growing on them. The higher the natural concentration of iron in the water the faster the plugging and the more iron encrustation will occur. Iron bacteria may take anywhere from a few months to several years to form. Poor well efficiency is first noticed. Then the pumping water level will drop, allowing air to be sucked into the pump. Oxygen then enters the water and helps speed up oxidation of the iron. Iron bacteria infestations in a water supply is noted as very discolored reddish-brown precipitates and yellow or brown organic matter throughout the water accompanied by strong foul odors. At more advanced stages corrosive sulfate-reducing bacteria become present with the iron bacteria, damaging well casings which lowers water quality with hydrogen sulfide gas present in the water.

Treatment

In treating waters with high concentrations of iron and/or iron bacteria, two approaches must be made: remove the iron from the water and control the iron bacteria. You can choose one of two paths to remove the iron: (1) drill a new well or, (2) use technology to treat the water. Drilling a new well needs careful and extensive research on local aquifers and their quality. Montana Bureau of Mines and Geology in Butte, Montana can be a good information source on groundwater and aquifer quality. Most of the time drilling a new well is not a feasible approach. There are three ways to treat iron-rich waters: (1) oxidize the ferrous into a precipitate and then remove with a filtration system, (2) use a water softener unit to adsorb ferrous iron onto the ion exchanger, and (3) keep the ferrous iron from oxidizing and settling out with chemicals known as sequestering reagents. (The filtering system usually works best for higher iron concentration waters.)

Controlling iron bacteria can be difficult and in some cases impossible. It is wise to determine the iron concentration in your water first. If your iron concentration is greater than 0.5mg/L, your well could be infiltrated with iron bacteria. The best measure in taking control of iron bacteria is regularly disinfecting the well one to two times a year, depending upon iron concentrations. Chlorine is most effective in well disinfection. Household bleach may be used for disinfection, but it must be flushed completely from the system because it is not NSF approved for human consumption. The DEQ, Public Water Supply Section, has the correct well disinfection procedures available which give you step by step directions, as well as calculating well volumes and chlorine doses. By following these directions, it is possible to control your iron bacteria problem, please your costumers, and stop the frequently asked questions about rust colored water.

*Information, data, and tables obtained from article, "Iron and Iron Bacterial Problems in Montana Groundwater," Montana Bureau of Mines and Geology and MSU- Soil Scientist, Jeff Jacobson.

REMEDYING SOME BACTERIA PROBLEMS

by Rick Duncan

Ancient pressure tanks. Decrepit activated charcoal or carbon filters. Old chlorine contact tanks, filter cartridges, and similar components which once served a purpose in water distribution systems, but were never changed out or disconnected. What do all of these things have in common? They all have been implicated in bacterial contamination events in public water supply systems in Montana.

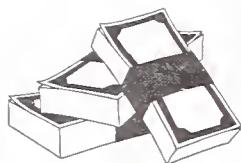
Some of these contamination events have resulted in the issuing of Public Health Advisories. At least one resulted in a Boil Water Order when fecal coliform bacteria showed up in one of the unsatisfactory samples.

A community public water supply in the Flathead area experienced problems with coliform bacteria in a routine monthly sample taken in June of 1998. The check samples were also contaminated. The five follow-up samples, which were collected in July, also had coliforms present. Three of those samples had levels “too numerous to count” (TNTC). During an inspection, the personnel of the local health department on contract with the Public Water Supply Section, determined that ten (10) of the pressure tanks on this system were waterlogged. The pressure tanks were replaced by a water well service company. Three special water samples taken after the tanks were changed out all had satisfactory (coliform absent) results. Sampling history since has also indicated absence of coliform

A non-community system, a country club in Montana, was having difficulty getting a bacteriological sample sufficiently free of heterotrophic bacteria (non-coliform) in order to have a valid sample result. They had tried shock disinfection of the system on at least two occasions earlier in the month, yet samples were still coming back as either “heavy growth” (HG) or TNTC, non-coliform. One of the officers of the country club called the PWS Section for assistance and, in describing the system, identified an old “sediment trap” which had earlier been in service while a shallow well in a sand and gravel aquifer had provided water to the clubhouse. When informed that the trap could be serving as a reservoir for non-coliform bacteria, the club officer stated that he would be contacting a plumber to remedy the problem.

The final example is from a combination work camp and research facility in western Montana. The system was placed on a Health Advisory in early August after coliform contaminated samples were confirmed. Subsequent testing of samples from the system also turned up fecal coliform contamination, making it necessary to change the Health Advisory to a Boil Order. An on-site visit from one of the Department of Environmental Quality’s (DEQ’s) contract inspectors revealed two old tanks which had been used for chlorine contact when the system had used a chlorinator for disinfection. Although the system was no longer using full-time disinfection, the tanks were still plumbed in and on-line. A sample obtained from one of the tanks had a distinct and dark discoloration. The recommendation was that the tanks be taken off line, or at least cleaned out and valved off. This done, and the system shock disinfected, the system was re-sampled. The five follow-up samples taken afterward were satisfactory, and the Boil Order was rescinded in early September. All subsequent sampling has proven satisfactory for absence of coliform.

While the antiquated, ill-maintained or unused water system components may not have been the original source of bacteria which contaminated these systems, the removal or renovation of them has clearly been of assistance in remedying these contamination problems. Do you have unused or marginally operating tanks, filter cartridge systems, or other appurtenances in your water system’s distribution network?



DWSRF PROGRAM UPDATE

The Fall 1998 issue of the Clearwater contained an article announcing the arrival of the Drinking Water State Revolving Fund (DWSRF) Program. This program is administered jointly by the Department of Environmental Quality (DEQ) and the Department of Natural Resources and Conservation (DNRC) in a manner similar to the Water Pollution Control SRF.

DEQ/DNRC received formal approval of its DWSRF Program from the Environmental Protection Agency (EPA) on June 30, 1998. The anticipated demand for these low interest loans was confirmed immediately. The program already has funded over \$7 million in engineering and construction activities for Public Water Supplies. Improvements include projects in East Helena, Havre, and Whitefish, which are in the design stages, while Lakeside, Laurel, Missoula Co./Sunset West, and Twin Bridges started, and in some cases, completed construction last fall. Project types vary from storage reservoirs and distribution system upgrades to additional source development and water treatment plants.

Over \$18 million worth of additional projects are planned for the 1999 construction season, pending CI-75 impacts. Consequently, the DWSRF program is applying to EPA for the next two eligible capitalization grants (FY 98 and 99). More details about anticipated projects and other DWSRF activities are outlined in the program's Intended Use Plan. Copies of this plan are available by contacting DEQ or DNRC, and it can also be found on DEQ's web site under the Planning, Prevention, and Assistance Division.

For more information about the DWSRF program, contact:

Dept. of Environmental Quality
Water SRF Program
P.O. Box 200901
406/444-6697

Dept. of Natural Resources and Conservation Drinking
Conservation and Resource Development Division
P.O. Box 201601
406/444-6668

TECHNICAL ASSISTANCE TO SMALL PUBLIC WATER SUPPLIES

The Department of Environmental Quality (DEQ) is in the process of selecting a contractor to provide operation and maintenance technical assistance (O&M TA) to public water supplies serving a population of 10,000 or less. This assistance will be provided to address specific or general problems in the O&M of small water systems. The scope of O&M technical assistance includes evaluation and TA for wells, intake structures, distribution systems, pumps, valves and piping, water storage, chemical feed systems, and minor electrical systems. Other services include assistance in development and use of O&M manuals, maintenance scheduling, sampling and monitoring schedules, etc. The scope of this contract will be to provide both routine and requested O&M technical assistance.

Funding for this program is provided through the Drinking Water State Revolving Fund (DWSRF). It is anticipated that approximately 100 on-site visits could be conducted per year. If you have any questions or interest in participating in this new program, please contact Marc Golz at 444-6770 or Terri Anderson at 444-6777.

SPRING 1999 CONFINED SPACE ENTRY REFRESHER CHECKLIST

Confined Space Identification

- 1. Identify ALL potential confined spaces.**
- 2. Label all Confined Spaces.**
- 3. Remove all Confined Space hazards possible (engineering, ventilation, etc.)**
- 4. All confined space areas must be documented as Low-hazard or Permit-required.**
- 5. Safety Procedures must be written for entry into all Confined Spaces.**
- 6. Confined Space Permits must be issued before entry into any permit-required Confined Space.**
- 7. For all Confined Space entries, follow applicable rules listed below!**
- 8. List emergency phone numbers below.**

Check List

- ___ Have a written safety checklist.**
- ___ Have written entry procedures.**
- ___ All persons involved must be trained.**
- ___ Have rescue equipment at the confined space entry site.
(Tripod, harness, rope, hoist, SCBA, etc.)**
- ___ Test the atmosphere for oxygen levels and toxic gas presence initially and at 15 minute intervals afterwards.**
- ___ Set up blower and ventilate confined space.**
- ___ Have a standby person available.**
- ___ Discuss entry and exit plans before entering.**
- ___ Wear protective equipment properly.**
- ___ Have a means to communicate with the standby person at all times.**
- ___ Enter, do only the permitted work, and exit.**

IS CROSS-CONNECTION CONTROL VOLUNTARY?

by Greg Butts

A new rule was adopted into the Administrative Rules of Montana (ARM) last summer, referred to as “The Voluntary Cross-connection Control Rule”. The rule, numbered 17.38.301 thru 17.38.312 ARM, and titled Subchapter 3, Cross-connections in Drinking Water Supplies, can be found in copies of the Public Water Supply ARM revised June 30, 1998. Cross-connection control and backflow prevention definitely are not voluntary. There have been laws in Montana for many years outlawing unprotected cross-connections. The voluntary part of Subchapter 3 is 17.38.310 thru 17.38.312; Voluntary Cross-Connection Programs. These programs are voluntarily set up by Public Water Systems using this rule as their guide. A cross-connection control program is a very important tool for all Public Water Systems to establish, because it may help prevent the contamination of the water systems due to backflow. Presently, Mountain Water Company of Missoula is the only system that has submitted a Cross-Connection Control Program. Their program was approved and they are working on implementing it. If you would like more information about establishing a Cross-Connection Control Program at your water system or if you have questions about backflow prevention, contact Greg Butts at 755-8985. You can also contact your favorite DEQ specialist in Helena at 444-4400.

CAPACITY RULES FOR NEW WATER SYSTEMS

by Janet Cherry

The Department of Environmental Quality, Public Water Supply Section, is currently developing capacity rules for new community and non-transient non-community water systems. The Environmental Protection Agency (EPA) has required states under the Safe Drinking Water Amendments of 1996 to adopt capacity development rules by October 1, 1999. States that do not comply with this deadline will have funding withheld from its Drinking Water State Revolving Fund Program (DWSRF). The Montana DWSRF Program would lose approximately \$1.5 million dollars for fiscal year 1999, and suffer future financial penalties until rules are adopted.

What is capacity? Capacity development is defined as water systems acquiring and maintaining adequate technical, managerial, and financial capabilities to enable it to consistently provide safe drinking water. Technical capacity is the physical infrastructure of the water system, including source water protection, source water adequacy, infrastructure adequacy, and technical knowledge based on information provided by the system owner, manager, and operator. Managerial capacity is defined as the management structure of the water system, including ownership accountability, staffing, and organization. Financial capacity is defined as the financial resources of the water system, including rate structure, revenue sufficiency, credit worthiness, and fiscal controls.

The Public Water Supply Section intends to present capacity rules to the Board of Environmental Review and will have public meetings in March, pending Board approval of the proposed rule-making. When rules are finally adopted, all new community and non-transient non-community water systems will need to address capacity of the new system. The purpose of this information is to allow evaluation of a new system for proper system design, management, operation and maintenance, and financial planning that provides long-term stability of the new system.

If you have further questions on capacity, please contact Jim Melstad, Ryan Leland, or Janet Cherry at 444-4400.

1999 MONTANA TRAINING CALENDAR FOR WATER, WASTEWATER AND OTHER ENVIRONMENTAL PROFESSIONALS

by Barb Coffman, METC Training Specialist

METC mailed the 1999 Montana Training Calendar for Water, Wastewater and other Environmental Professionals on December 18th to certified water and wastewater operators, well drillers, county sanitarians, engineers, town clerks, and county extension agents. The calendar includes training provided by the Montana Environmental Training Center (METC), Montana Rural Water Systems (MRWS), Midwest Assistance Program (MAP), Montana Section of American Water Works Association (MSAWWA), Montana Water Environment Association (MWEA), Montana University System Water Center, Montana Association of Water and Sewer Systems, and the Wyoming/Montana Safety Council (WMSC).

If you would like to receive a calendar, call METC at (406) 454-2728 or write to 1211 NW Bypass, Great Falls, MT 59404. You may also view the calendar at METC's website at www.msun.edu.stuaffairs/grants/metc or go to www.msun.edu and click on METC under choose your destination. Please note this is a new website address for METC. The website also has links to all training organizations listed on the calendar, allowing you to checkout their websites.

1999						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

METC RECEIVES BAHR TRAINING AWARD

by Bill Bahr



The Montana Environmental Training Center (METC) received the annual Bahr Environmental Trainer of the Year Award at the 65th Annual School for Water and Wastewater Operators/Managers at Montana State University-Bozeman in September 1998. METC was selected as the recipient of this reward for providing ten years of quality educational seminars for water and wastewater operators and other water quality and environmental professionals throughout Montana.

The Bahr award acknowledges dedicated individuals and groups who provide continuing and substantial environmental training to water and wastewater treatment professionals and who protect the public health and the environment in Montana. METC was recognized by their peers and by water quality professionals around the state for being essential to environmental training. Operators statewide also acknowledged the quality of the annual Fall Water School, an event cosponsored by METC and the staff at DEQ and MSU-Bozeman.

METC sponsors training sessions spanning a wide range of environmental issues from drinking water and wastewater regulations and treatment to watershed planning, evaluation, and management. The organization makes special efforts to provide high quality speakers at the annual training seminars. This year at the Yellow Bay workshop, METC featured Paul Klopping, Dr. Bill Oldham and Dr. Martha Dow, nationally recognized guest speakers. METC has also featured nationally renowned trainers such as Susan McMaster, Fred Delvecchio, and Lorene Lindsay at the Train-the-Trainer seminars.

We extend our congratulations to the METC staff, Jan Boyle and Barb Coffman (and others), for the excellent contributions METC has made to improving Montana's waters and protecting the environment. Please join me in acknowledging the outstanding training provided through the continuing efforts of the METC staff and their statewide network of supporters.



AWRA's CALL FOR PAPERS

About the Conference

The American Water Resource Association's 1999 Summer Specialty Conference in Bozeman, Montana, has two exciting and thought-provoking tracks! **Track #1** will cover topics regarding science and politics - **Science Into Policy: Water in the Public Realm**. **Track #2** will have presentations on **Wildland Hydrology**. The topics appear to be different and diverse, but there is a significant crossover. The conference will provide excellent opportunities for scientists and policy makers to exchange ideas and opinions about the future of water resources.

Abstract Submittal

Submit abstracts using the 'Abstract Submittal Form' by **February 1, 1999**, to:

Track#1:

American Water Resource Association
Attn. Ms. Eloise Kendy, Track 1 Technical Program Chairperson
Science Into Policy: Water in the Realm
950 Herndon Parkway, Suite 300, Herndon, VA 20170-5531
Fax: (703) 904-1228 / Phone: (703) 904-1225 / E-mail: awrahq@aol.com

Track#2:

American Water Resource Association
Attn: Darren Olsen, Track 2 Technical Program Chairperson
Wildland Hydrology
950 Herndon Parkway, Suite 300, Herndon, VA 20170-5531
Fax: (703) 904-1228 / Phone: (703) 904-1225 / E-mail: awrahq@aol.com

Abstracts Are Due February 1, 1999

If you have any immediate questions you may contact:

Vivian Drake, M.S.
Lewis and Clark County Water Quality Protection District
Phone: (406) 447-1668
e-mail: drake@co.lewis-clark.mt.us

1998 MWEA BIOSOLIDS AWARD WINNER

City of Helena

*by Paul Montgomery, Chairman
MWEA Biosolids Committee*

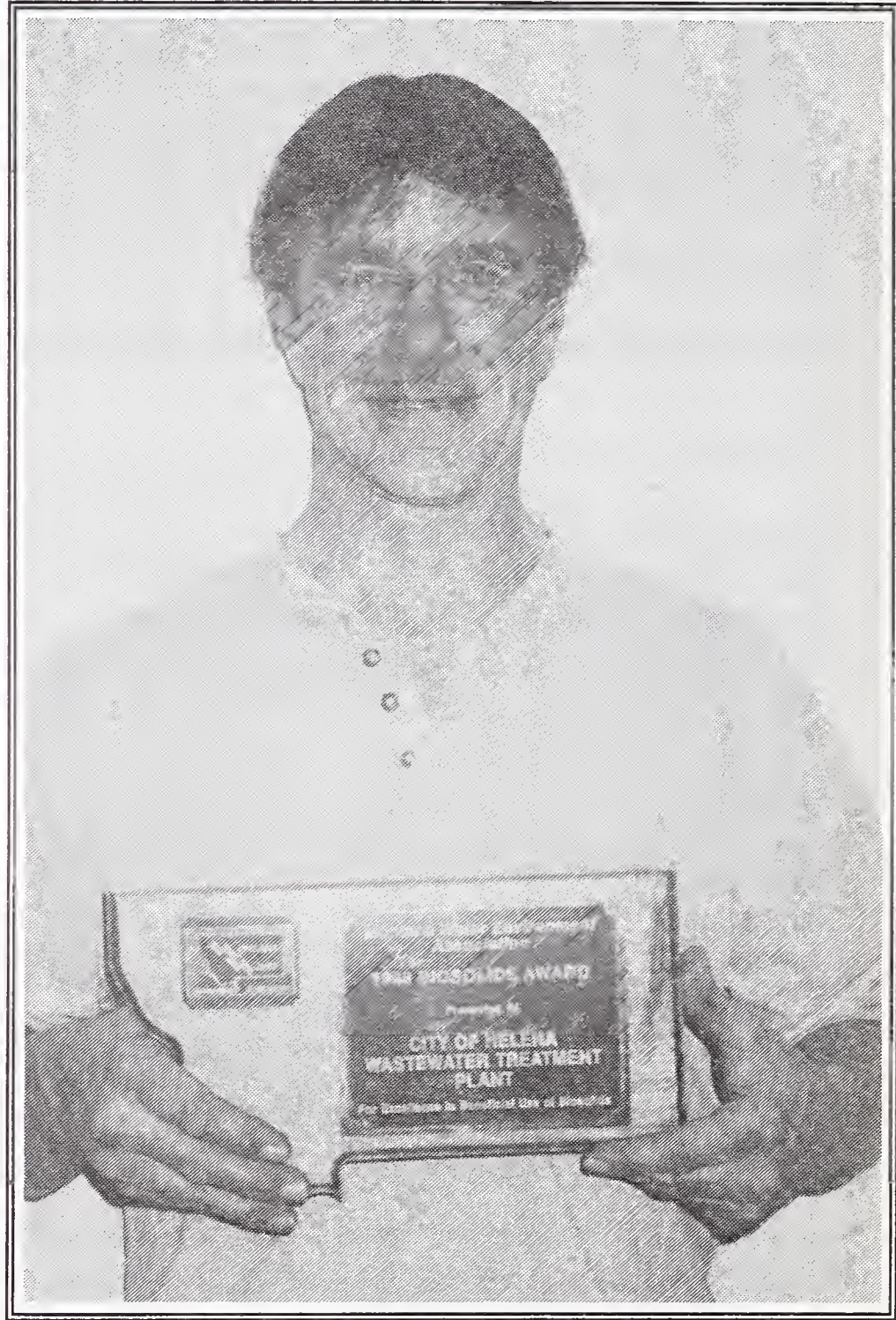
The City of Helena was awarded the 1998 Montana Water Environment Association (MWEA) Biosolids Beneficial Reuse Award for their extensive and well-managed Biosolids program. Bryan Lewis, manager of the program, accepted the award plaque on behalf of the City at the 1998 Joint Conference from the Montana Section of the American Water Works Association.

The program started in the early 1980s when the City purchased a sludge injection truck and tanker and began injecting primary sludge on 480 acres of land east of Helena. Since that time, the wastewater plant abandoned its Purifax system, added anaerobic digesters and began injecting its digested sludge in over 1,500 acres made available through the Ken Diehl Ranch Company. The landowner allows the City to use the property for sludge injection at no cost and actually provides fuel for the sludge injection trucks and tanker trucks. The landowner sees a benefit in increased crop yields and higher protein content from its dry land farming operation and thicker grass for grazing cattle. Of course the City observes all the necessary restrictions outlined in the federal sewage sludge rules when applying sludge to crops and rangeland.

The City also puts together several public information events each year regarding wastewater treatment and the Biosolids program. Elementary school classes are invited to tour the plant and travel to the land application site to view, first-hand, the whole process. This is truly an educational experience for any child and the feedback is always surprising.

The next step in the Helena Biosolids program will be the purchase of a new truck that will be able to apply de-watered biosolids to the land. Typically, the de-watered material goes to the county landfill for disposal, but with the new equipment they will be capable of utilizing more biosolids for beneficial reuse. The City always entertains new ideas to expand the program.

On behalf of the MWEA, we salute the City of Helena for a beneficial reuse program that is comprehensive, compliant, and innovative. Congratulations on a job well done and a fine application!



Brian Lewis from the City of Helena WWTP received the Award

DOES YOUR CAPACITY NEED DEVELOPING??

*By Judy Sass, Rural Development Specialist
Midwest Assistance Program*

Is your small water system in need of “major surgery” in order to develop your capacity? Is your capacity already healthy? Or, is it beyond repair? When do you need to have it diagnosed? Is there a cure? Is there a “specialist” that you can consult? And, of course, WHAT WILL IT COST to have this development process undertaken and completed?!?!?

Why is this “Capacity” so important anyway, and who even says it’s important?!? Is this just another idea from someone who doesn’t have enough to do? Is it another attempt to “make more work” for small water systems? Why do we have to worry about this now when we have Consumer Confidence Reports to consider, Phase II & Phase V sampling, Nitrates, VOC’s, IOC’s, SOC’s, Rad’s, Source Water Protection, Operator Certification, Continuing Education Credits, and, of course, the dreaded monthly bacti’s to deal with!

Sometimes it appears that the owners and operators of small water systems have more to think about, more to remember, more to worry about, and more new things to understand than there are hours in the day to accomplish (especially after a day at work, which is required to support your family; we know many operators are volunteers). I hope the following information will make more time for you to move ahead with other pressing issues, and put aside your worries about your “Capacity” and its “Development”.

When Congress passed the 1996 Amendments to the Safe Drinking Water Act (SDWA), they had the safety and health of the public “at heart”. They had advice from many organizations and groups, and their final decision included a requirement for “Capacity Development” programs in every state.

In preparation for this article, I spent time reading, thinking (really!), and considering articles and presentations on “Capacity Development”. Then, the light bulb came on, and I decided to go to the dictionary to look up the definitions of “Capacity” and “Development”. The first revelation was that I don’t use my dictionary often enough, since it was copyrighted 1951 inside. Just imagine all the new words we have added to our dictionaries since 1951! Sorry, I digress. My Thorndike Barnhart Comprehensive Desk Dictionary defines as follows:

Capacity:	Power of receiving and holding; Ability ; power; Syn. Competency
Develop:	Grow; Display; Show

Taking these two definitions and applying them in the context of “Water System Capacity Development” was really quite easy. **I believe that Water System Capacity Development means that a system must have the ABILITY to provide consistent safe and affordable drinking water to their customers, and must SHOW they have that ability.** A system can show this ability by being competent in all aspects of managing, financing, and operating their water system.

There are three “legs” of Capacity: **Technical, Financial & Managerial**. Each “Leg” is vital to holding up the “table” of your system. Without adequate capacity in any of the three “legs”, the table will fall and “corrective surgery” may be necessary. I believe that most small water systems in Montana

already have most of the capacity they need, but no one has ever defined their abilities in managing, financing and operating their system as “CAPACITY”.

TECHNICAL CAPACITY: SOURCE WATER, INFRASTRUCTURE, O& M

In order for your system to SHOW your ABILITY in TECHNICAL CAPACITY you need to know where your water comes from (SOURCE), know the quality (YOUR ON-GOING SAMPLING), know the condition of the pumps, pipes, etc. (INFRASTRUCTURE) in the system, and provide adequate Operation & Maintenance (CERTIFIED OPERATOR, COMPLIANCE MAINTAINED).

Quick Quiz: Does your system have an identified source of water? Has your system considered protecting that source? Does your system conduct on-going sampling? Has your system met all compliance requirements for sampling? Does your system have a certified operator in the proper class for your size/complexity of system? Do you have a current Administrative Order from The Montana Department of Environmental Quality (DEQ) for a violation?

Answers: #1-5 Yes # 6 No

If you answered **Yes** to questions 1 through 5, and **No** to questions 6, you probably have **TECHNICAL CAPACITY!**

FINANCIAL CAPACITY: REVENUE SUFFICIENCY, CREDIT WORTHINESS, FISCAL MANAGEMENT

In order for your system to SHOW your ABILITY in FINANCIAL CAPACITY you need to know if your system's income is more than its expenses. This can be accomplished by establishing a good set of fiscal policies. If you have borrowed money for construction, repairs, or expansion of your system, and if you have paid that money back in a timely fashion, you have established the credit worthiness of your system. If you have adequate fiscal policies, pay your bills on time, have an adequate fee/rate structure, and meet your payroll and expenses every month, you are well on the way to having FINANCIAL CAPACITY!

Quick Quiz: Does your system have adequate funds to cover all sampling costs, all required printing costs, all normal repairs, plus a reserve for “emergency repairs”, and a reserve for repayment of loans? Does your system review your rate structure at least every two years? Has your system borrowed money or have any bonded indebtedness? Have you made all payments on time and still have a reserve for “emergencies”? Does your system have a billing structure in place? Does your system have a “delinquency policy” for past-due accounts? Does this include collection procedures? Does your staff prepare monthly financial reports that are clear and concise? Does your staff have clear records available on the status of checking and/or saving accounts? Has your system considered a capital improvements plan (looking ahead, planning for the next 1-, 3-, and 5-years for repairs, replacements, and expansion)?

Answers: #1-11 Yes

If you answered **Yes** to questions 1 through 11, you probably have **FINANCIAL CAPACITY!**

MANAGERIAL CAPACITY: OWNERSHIP ACCOUNTABILITY, STAFFING & ORGANIZATION, EFFECTIVE EXTERNAL LINKAGES

In order to SHOW your ABILITY in MANAGERIAL CAPACITY, you will need to know and document the ownership of your system, have staff and a management organization (BOARD OF DIRECTORS, TOWN COUNCIL, ETC.) in place, and be a part of a “network” outside your board meetings (TECHNICAL ASSISTANCE PROVIDERS, TRAINERS, REGULATORS, SYSTEM CONTRACTORS, ETC.).

Quick Quiz: Do you have a clearly identified owner of your system? (This may be a rare problem in Montana, but apparently it has occurred somewhere for it to be included in the new law.) Is the “owner” of the system identified as a local government, a private owner, or some other type of ownership? Does your system have adequate staff who are accountable to the “owner” of the system to handle billing and day-to-day management of the system? Does your system have a clearly defined organization (County Water & Sewer District, Water Users Association, Incorporated Town or City) for conducting all management aspects of the system? Has your system “expanded your horizons” by requesting and receiving information and assistance from all the available “help” that is out there for the asking?

Answers: #1-5 Yes

If you answered **Yes** to questions 1-5, you probably have **MANAGERIAL CAPACITY!**

If you answered **No** to question #5, I would encourage you to begin **immediately**.

REMEMBER - there IS help out there. There are third party technical assistance providers, staff at DEQ (who are willing to help), contract managers (who can be your effective “Compliance Insurance”), contract operators (who can take your samples if you don’t want to), training sessions sponsored by METC, MAP, MRWS, and others in a multitude of locations around the state. The state DEQ will be developing a state Capacity Development program that will require new systems to “prove” they have Technical, Financial and Managerial Capacity prior to start-up. The program also will include a capacity development strategy for present systems that may need to upgrade their capacity. In order for a system to be eligible to receive the new drinking SRF loan funds, they must prove their capacity in all three areas.

All in all, I would ask you to consider this new capacity development as just a new way of saying what many of us have been saying about small water systems in Montana for some time. It is important that you are in compliance; you have used public funds to finance improvements or construct new systems (most of the current applications for these funds require all of the above information, but they are not called “CAPACITY” in the applications); and finally, **You Are Protecting Public Health by Providing Safe and Affordable Drinking Water to Your Customers.**

Judy Sass has been working with small water and wastewater systems in Montana and South Dakota since 1979. She served on the National Operator Certification Work Group with EPA and National Drinking Water Advisory Council (NDWAC) that wrote the new Operator Certification Guidance required under the 1996 Amendments to the SDWA. She has provided training for the National Environmental Training Center for Small Communities (NETCSC), has been a resource to NETCSC for several curriculums written for small water and wastewater systems, serves on the Region VIII EPA Small Community Work Group as an active member, is a member of AWWA, and provides training and technical assistance to small communities, special purpose districts and privately owned water and wastewater systems across Montana.

Don't Forget!

Fall Water & Wastewater Exams

October 1, 1999

MSU-Strand Union Building, Bozeman



To receive application information, call Tom Sanburg at (406) 444-3434 or return the bottom of this page to:

Department of Environmental Quality
Water and Wastewater Operator Certification
PO Box 200901
Helena, MT 59620-0901



Water & Wastewater Operator Certification

Please send me an application package for the following exam:

	1	2	3	4	5
A - Water Distribution	—	—	—	—	—
B - Water Treatment	—	—	—	—	—
C - Wastewater Treatment	—	—	—	—	—

Name: _____ Operator #: _____

System Name: _____

Mailing Address: _____

City/ State/ Zip: _____

PERMITTING & COMPLIANCE DIVISION

Community Services Bureau Water & Wastewater Operator Certification

BILLINGS
COLUMBIA FALLS
(formerly KALISPELL)
GREAT FALLS METC
HAVRE
HELENA
MILES CITY
MISSOULA

Holiday Inn; 5500 Midland Road
Montanan Hotel; 7358 Hwy 2 East

MSU - Northern at Great Falls; 1211 NW Bypass; Room 101
MSU-Northern; Hagener Science Center; Room 113
Cogswell Building; 1400 Broadway; Room C209 (use south side entrance)
Miles Community College; 2715 Dickinson; Room 106 (main building)
Ruby's Reserve Street Inn; 4825 North Reserve Street Room 600

NOTE: THERE WILL BE NO EXCEPTIONS TO THIS: By **MARCH 5, 1999**, as required by ARM 17.40.206, everyone taking examinations must have:

1. Completed an application for certification as a water/wastewater operator;
2. Paid application (or renewal) fees for fiscal year '99 which ends 6/30/99; and
3. Submitted examination registration slips and fees of \$20 per examination.
(Combination examinations **2A3B, 3A4B, 4AB and 5AB** require a \$20 examination fee per exam.)

APPLICATION FEES ARE:

\$30 for water
\$30 for wastewater

To request application materials, or to ask for additional information, call the certification office at 444-3434 for Tom Sanburg, 444-4854 for Tausha Smith or write:

Department of Environmental Quality
Water/Wastewater Operator Certification
P.O. Box 200901 - Helena MT 59620-0901



PLEASE KEEP THE UPPER PORTION OF THIS NOTICE

EXAMINATION REGISTRATION SLIP

(To register for an exam, detach and return this slip with appropriate fees by March 5, 1999)

The box marked below is where I will take the examination(s):

☐ Billings ☐ Columbia Falls ☐ Great Falls ☐ Havre ☐ Helena ☐ Miles City ☐ Missoula

	1	2	3	4	5
A - Water Distribution	_____	_____	_____	_____	_____
B - Water Plant	_____	_____	_____	_____	_____
C - Wastewater Plant	_____	_____	_____	_____	_____

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

OPERATOR # _____

SYSTEM NAME _____



APPLICANTS PASSING EXAMINATIONS
FOR FULL CERTIFICATION
OR OPERATOR-IN-TRAINING (OT)
1998 SUMMER AND FALL WATER SCHOOLS



<u>NAME</u>	<u>CITY</u>	<u>CLASS 1'S</u>	<u>NAME</u>	<u>CITY</u>	<u>CLASS 3'S</u>
ALCORN, Perry	Havre	1A OT	ADAMS, Rodney D.	Decker	3A4B OT
BUTTON, Edward F. Jr.	Billings	1D	COLLYER, Leona C.	Choteau	3A4B OT
FERRI, Robert P.	Gardiner	1D	GUNTHER, Karen L.	Broadus	3A4B
FRETHEIM, Joe P.	Shelby	1B	HARNETT, Neil	Thompson Falls	3A
HOINES, Michael V.	Billings	1D	HORSWILL, Galen L.	Deer Lodge	3C
HOLMES, Kirk S.	Chester	1B OT	LEEP, Jason L.	Bozeman	3C
KING, David A.	Bozeman	1C OT	LEWIS, Lee	Townsend	3A4B
KRIZEK, Boris A.	Billings	1B OT	MALINAK, Leo R.	Valier	3C OT
LEVESQUE, Jerry S.	Conrad	1D	MCCLEARY, Jeffrey L.	Missoula	3A
MEARS, John W.	Bozeman	1A	MCDERMOTT, Neil P.	Ronan	3C
MILAM, David B.	Havre	1A OT	MCDOWELL, Paul F.	Eureka	3A 3C
MURTAGH, Scott A.	East Glacier	1B OT	MCLAUGHLIN, Terance J.	Missoula	3A4B
PRAHL, Robert A.	Miles City	1A OT	MORKEBERG, Lawrence R.	Troy	3C OT
RUBICH, Michael L.	Billings	1B OT	MURTAGH, Scott A.	East Glacier	3A
SCHUG, Timothy N.	Billings	1D	NEIDHARDT, Kevin	Darby	3C OT
SMITH, Fredrick A.	Havre	1B OT	NORMAN, David C.	Troy	3C 3A4B
SOLOMONSON, Paul J.	Sidney	1B	OXFORD, Andrew A.	Belgrade	3C
WILSON, David J.	Miles City	1B OT	PADDOCK, Vince R.	Corvallis	3A4B OT
			PETTY, William J.	Glendive	3A4B OT
			PULSE, Kelly R.	Glendive	3C
			ROBERTS, Duane E.	Deer Lodge	3C
			RODRIGUEZ, Santiago M.	Corvallis	3A4B OT
			SALISBURY, John A.	East Glacier	3C
			SHELINE, Lynn C.	White Sulphur	3A OT
			SLOAN, Clay A.	Pablo	3C OT
			TURNER, Bruce J.	Hobson	3C OT
			ULLERY, Norma K.	Reedpoint	3C OT
			WALKER, Ashley R.	Polson	3C
			WARD, Jerry L.	Whitehall	3A4B
			ZUCK, Dale R.	Stanford	3A4B OT
<u>NAME</u>	<u>CITY</u>	<u>CLASS 2'S</u>			
BROWN, Robert J.	Thompson Falls	2B OT			
CHAMBLIN, John S.	Thompson Falls	2B OT			
CLARY, Mark A.	Ronan	2A2B OT			
COMER, Joanne C.	Willow Creek	2C			
HALLORAN, Shari A.	Columbia Falls	2C			
KAPP, Leo C.	Cut Bank	2A			
LEEP, Jason L.	Bozeman	2A3B OT			
MCDOWELL, Paul F.	Eureka	2B OT			
OXFORD, Andrew A.	Belgrade	2A3B			
WINDER, Guy A.	Fort Peck	2B OT			

KEY

A = Water Distribution Operator
B = Water System Operator
AB = Well Water System Operator
C = Wastewater System Operator
D = Industrial Wastewater System Operator
OT = Operator-in-training



<u>NAME</u>	<u>CITY</u>	<u>CLASS 4'S</u>	<u>NAME</u>	<u>CITY</u>	<u>CLASS 5'S</u>
ADAMS, Rodney D.	Decker	4C <i>OT</i>	AILES, Todd H.	Huson	5AB
CAMPBELL, Eric	Belgrade	4A	BARTHOLOMEW, Julie A.	Miles City	5AB
ERICKSON, Shane A.	Hamilton	4AB	BEATY, Kathryn, E.	Hamilton	5AB
FRETHEIM, Joe P.	Shelby	4A	BIRKLAND, Theodore B.	Peerless	5AB
GUNTHER, Karen L.	Broadus	4C	BOON, Fred W.	Thompson Falls	5AB
HEMMER, Robert	Belgrade	4AB	CAMPBELL, Sandi A.	Edgar	5AB
HOFF, Reginald E.	Colstrip	4AB	CARROTT, David W.	St. Regis	5AB
LARSEN, Rodney I.	St. Marie	4C	COUGHLIN, Gene P.	Helmville	5AB
LEMKE, Patrick	Billings	4AB <i>OT</i>	ERVIN, Jack F.	Colstrip	5AB
LEWIS, Robert R.	Boulder	4AB 4C	GATES, Teresa A.	Cameron	5AB
MORIN, Eugene	Victor	4AB	HERZOG, Michael A.	Bozeman	5AB
NEIDHARDT, Kevin	Darby	4AB	HOFER Jr., Joe	Harlem	5AB
NYGAARD, Richard	Trout Creek	4AB <i>OT</i>	LETT, Omar	Whitewater	5AB
PLATT, Allen E.	Drummond	4AB	LINDHORST, Marne L.	Great Falls	5AB
FISHER, Ryan C.	Kalispell	4AB	MARCELL, William R.	Miles City	5AB
HOERNING, John D.	Kalispell	4AB	MCINTYRE, Harold F.	Belgrade	5AB
HOUTZ, Karla	Kalispell	4AB <i>OT</i>	NICHOLS, Bryce H.	Frazer	5AB
MATTEUCCI, Jim A.	Missoula	4AB <i>OT</i>	O'CONNOR, John D.	Missoula	5AB
PARKER, William A.	Roberts	4AB <i>OT</i>	PRATTON, Kenneth V.	Reed Point	5AB
ROSS, Mary J.	Kalispell	4D	ROARK, Charles I.	Great Falls	5AB
ROUNS, Daniel L.	Brady	4C	SKULTETY, Martin	Big Fork	5AB
SCHAFER, John	Jefferson City	4AB	VAN TATENHOVE, William F.	Bozeman	5AB
SHELINE, Lynn C.	White Sulphur	4C	VINSON, Patricia B.	Thompson Falls	5AB
SHUMAKER, Thomas L.	Three Forks	4AB			
THIESEN, Dan	Manhattan	4C			
VARLAND, Merle	Augusta	4AB			
WALDNER, George G.	Cut Bank	4A			
WARD, Jerry L.	Whitehall	4C			
WEINMEISTER, David P.	Nashua	4AB			
WELTON, Murray A.	Virginia City	4AB 4C <i>OT</i>			
WHEELING, Ray A.	Bozeman	4AB			
WURZ, William P.	Hillside Colony	4AB			
YARGER, Daniel A.	Ulm	4AB			

KEY

A = Water Distribution Operator

B = Water System Operator

AB = Well Water System Operator

C = Wastewater System Operator

D = Industrial Wastewater System Operator

OT = Operator-in-training



CONGRATULATIONS! To all of the above operators who passed their examinations during 1998. The examinations for certification require considerable time in study and preparation. Passing the examination represents a lot of hard work and initiative on the part of the individual. Be sure to show your appreciation to your water and wastewater operator for working hard to ensure that they are properly trained to care for your system!

WATER AND WASTEWATER OPERATOR CERTIFICATION NEWS

by Shirley Quick, Certification Officer, DEQ

JOANNE HALL EMRICK APPOINTED TO THE ADVISORY COUNCIL

Curtis W. Myran has completed his term on the Water and Wastewater Operators' Advisory Council as of October 16, 1998. Curt is the former public utilities director for the City of Miles City. Thank you for your hard work and commitment to operator certification, Curt. You will be missed on the Council and the Continuing Education Credit Review Committee.

Joanne "Joni" Hall Emrick has been appointed by Governor Racicot to fill the position vacated by Curt Myran. Governor Racicot appointed Joni as of October 16, 1998 to hold the position outlined in MCA, 2-15-2105(1)(d) that states: "one member who is a representative of a municipality that is required to employ a certified operator and who holds a position of city manager, city engineer, director of public works, works manager, or an equivalent position." Her term will end October 16, 2004.

Joni has been the manager of the Kalispell wastewater treatment plant since 1994. She was the lab technician and operator for that system from 1991-1994. Joni has also been the operator for the Kokanee Bend subdivision since 1991. She is fully certified in the following operator classifications: Class 4AB well water and Class 1C wastewater treatment. She also holds a Class 2A3B well water operator-in-training certification and is Montana lab certified for wastewater, drinking water, and milk.

Since Joni has been the manager for the Kalispell wastewater treatment plant, she has won the following awards: EPA Region 8 Excellence Award, First Place, 1996; Flathead Basin Commission Commendation of Excellence, 1996; and Montana Rural Water Systems, Inc. System of the Year, 1997.

Joni graduated with honors from UCLA with degrees in Bacteriology & Chemistry. She is an active member of the American Society for Microbiology, Montana Water Environment Association, and Montana American Water Works Association.

Welcome to the Council, Joni!

IMPORTANT

CERTIFICATION REQUIREMENTS FOR LAGOON OPERATORS

In order to protect public health and safety, Montana law 37-42-101 through 37-42-322 requires the person in direct responsible charge of a public sewage system that serves at least 15 service connections used by year-round residents **or** that regularly serves at least 25 year-round residents to have a certified operator.

In other words, if it is a public system and has a facultative lagoon, an aerated lagoon, or higher classification of wastewater treatment system, it must have a certified operator whether it is required to have an MPDES permit or not. The following portions of the operator certification law and rule define the classifications of nonindustrial wastewater systems:

Montana Codes Annotated, 37-42-102(8):

"Wastewater treatment plant" means a facility that:

(a) is designed to remove solids, bacteria, or other harmful constituents of sewage, industrial wastes, or other wastes; (b) discharges an effluent directly into state waters; and (c) is part of either an industrial waste discharge system or a public sewage system as defined in 75-6-102.

Administrative Rules of Montana 17.40.202(1)(c):

Waste water treatment systems:

(i) class 1--conventional, high rate, or biological nutrient removal activated sludge systems with or without tertiary treatment; (ii) class 2--treatment such as extended aeration, oxidation ditches, trickling filters, package plants, bio-discs or tertiary treatment systems discharging to state waters; (iii) **class 3--aerated lagoons;** (iv) **class 4--lagoons not utilizing artificial aeration.**

If your wastewater system falls under the above definitions, you are required to have a certified operator. For more information, call the certification office at 444-2691.

IMPORTANT

CECRC NEEDS ASSESSMENT SURVEY

Thanks to all of you who have completed and returned the Continuing Education Credit Review Committee (CECRC) Needs Assessment Survey for Training Needs and Onsite Technical Assistance that was mailed out to all certified operators along with their annual CEC Status Report. The CECRC is conducting this survey in order to determine the upcoming training and onsite technical assistance needs of all water and wastewater systems across the state. Your survey responses will help determine the upcoming training being conducted by all of the Approved Training Providers (ATPs) in Montana!

Topics covered on the survey include actual compliance, conservation, public health, and management and finance. If you haven't completed and returned your survey yet, please do before the April 1999 CECRC meeting so your vote can be counted for the types of training that will be held for certified operators in the future!

DESIGNATED OPERATOR FORMS COMING YOUR WAY

The owner of a public water or a public sewage system is responsible for ensuring that their system is operated and maintained in compliance with the requirements of the Montana Public Water Supply Act (PWSA). It is also their responsibility to keep the Department of Environmental Quality (DEQ) notified of any changes to their operator's status. To ensure that the department's records are accurate, the Public Water Supply Section will be sending out Designated Operator Forms in early 1999. When the forms arrive, if you have any questions or need further information, please call Shirley Quick, Certification Officer, at 406/444-2691 or Terry Campbell, Engineering Services Program Manager, at 406/444-5311.

The Designated Operator Forms will require the system owner to identify their type of operator coverage. The type of coverage falls into one or more of the following categories:

☛ **The system already has a fully certified operator on staff.**

- ☛ **The system doesn't have a fully certified operator, but does have a staff member who holds an operator-in-training certificate, and he/she still has to earn experience before becoming fully certified.**
- ☛ **The system doesn't have a fully certified operator, but is in the process of getting a staff member certified.**
- ☛ **The system doesn't have a fully certified operator on staff, but does have a contracted operator.**

The owners of the system will be required to complete the certified operator designation form, and have the operator(s) sign it. If the system does not have a certified operator, an application for certification and request for temporary certification must be completed and sent to the certification office with the completed form. A system may contract with a certified operator, but whether the operator is contracted or under direct employment, the duties and responsibilities of the designated operator are the same.

OPERATOR CERTIFICATION SCHEDULE OF EVENTS

Mark your calendar!

Feb 4	MRWS Exam Deadline
Feb 17-19	MRWS Conference Great Falls (454-1151)
Feb 19	MRWS Exam Great Falls (444-3434)
Mar 5	Spring Exam Deadline
Mar 17-19	METC Spring Water School Billings (454-2728)
Mar 17-19	MRWS Op. Cert. Seminar West Glacier (454-1151)
Mar 20	Spring Exams 7 locations (444-3434)
Apr 23-24	MAWSS Conference Missoula (273-3336)
April 24	MAWSS Exam (444-3434)
July 13-14	METC Summer Water School Kalispell (454-2728)
July 15	Kalispell Exam (444-3434)
Sept 16	Fall Exam Deadline
Sept 27-30	Fall Water School Bozeman (454-2728)
Oct 1	Fall Exam (444-3434)



TAUSHA'S CEC TIDBITS

Let me introduce myself. My name is Tausha Smith and I will be handling your continuing education credits (CECs) records. If you have any questions, comments, or concerns regarding your CECs, please feel free to contact me at 406-444-4584.

1. We have begun a new CEC period as of July 1, 1998. You need to meet your specified requirements by June 30, 2000. That gives you approximately 15 months to attend classes.
2. You should have received your CEC status reports in December. If you did not receive your report, need to make changes, or would like another one, please contact me at 406-444-4584.
3. If there is a class that you have taken and are not sure if the class will count towards your CEC requirements, Not to worry.
 - ⇒ Call the certification office to request an approval form
 - ⇒ Fill out the form completely and send back to the certification office along with a CEC report form
 - ⇒ Whether or not the course is approved is based on a committee. You will receive a letter as soon as the committee makes a decision.

NOTE: Operators-in-Training are not required to earn CECs.

MATH REVIEW FOR CERTIFICATION EXAM

Sponsored By

Water & Wastewater Operator Certification Program

Friday - March 19, 1999

6:30 - 9:30 pm

GREAT FALLS

MSU - Northern at Great Falls
1211 NW Bypass
Room 101

HAVRE

MSU - Northern
Hagener Science Center
Rom 113



HELENA

Cogswell Building
1400 Broadway
Room C209 (use south entrance)

MILES CITY

Miles Community College
2715 Dickinson
Room 106 (main building)

MISSOULA

Ruby's Reserve St Inn
4825 N Reserve St
Room 600

*BILLINGS

Holiday Inn
5500 Midland Road
Gallatin Room
1:30 to 4:30 pm

**WEST GLACIER (Sponsored by MRWS)

Glacier National Park Community Hall
Off Hwy 2, follow signs
6:30-9:30 pm

These sessions are intended to review basic math for those people with valid applications for the exam being given on Saturday, March 20. *Water school is not designed to teach you all you need to know to pass the exam OR to be a competent operator.* You must invest self-study time before attending the school.

Since these sessions are designed for entry level operators, *no CEC's will be given for any of these sessions*, either for the Friday evening sessions or the ones available through MRWS and the Billings water school.

*BILLINGS - At the March 1999 water school in Billings there will be sessions available each day to answer questions you may have from your self study, and to give you an overview of information. Contact the certification office at 406/444-2691 or the Montana Environmental Training Center at 406/454-2728 for more information on the spring water school in Billings.

WEST GLACIER - The sessions in West Glacier will be held from March 17 through March 19 and are taught and sponsored by Montana Rural Water Systems. For more information, contact their office at 406/454-1151. **Note: The **Kalispell** exam will be held at Flathead Valley Community College on March 20 (see exam notice).

**DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 200901, HELENA, MONTANA 59620-0901
MARK SIMONICH, DIRECTOR, 444-2544, FAX 444-4386**

FREQUENTLY CALLED PHONE NUMBERS AT THE DEQ:

**PERMITTING AND COMPLIANCE DIVISION
444-4323, FAX 444-1374
JAN SENSIBAUGH, DIVISION ADMINISTRATOR, 444-5270**

COMMUNITY SERVICES BUREAU, JON DILLIARD, BUREAU CHIEF, 444-2409

**Operator Certification Office: Shirley Quick, 444-2691 (all certification questions)
Tom Sanburg, 444-3434 (exams and renewals), Tausha Smith, 444-4584 (CEC status and request information)**

Public Water Supply, Jim Melstad, 444-5315; Jerry Burns - Billings Office, 247-4445

Name	Phone # 444-	Surface Water Ttmt	Training	Lead & Copper Rule	Phase II & V Rule	Eng Plan Review	Total Coliform Rule	GWUD ISW*	Bacti Results
John Camden	4071	X	X				X	X	
Terry Campbell	5311			X	X	X	X		
Rick Cottingham	4019	X	X				X	X	
Denver Fraser	5312	X				X			
Eric Minneti	4769		X				X		
Sandi Ewing	5314								X
Ryan Leland	5881			X		X			
Craig Pagel	5313				X	X	X		
Mike Brayton	4630		X					X	
Janet Cherry	5318					X			
Rick Duncan	3425						X		X
Cavin Noddings (Billings)	247- 4447					X	X		
Greg Butts (Kalispell)	755- 8985	X					X	X	X

*GroundWater Under the Direct Influence of Surface Water

WATER PROTECTION BUREAU, BONNIE LOVELACE, BUREAU CHIEF, 444-4969

Discharge Permits, **Fred Shewman**, 444-5329; **Sam Martinez**, 444-0917; **Mike Pasichnyk**, 444-5326; **Joe Strasko**, 444-2783; **Tim Byron**, 444-1454; **Terry Webster**, 444-1455

PLANNING, PREVENTION & ASSISTANCE DIVISION
444-6697, FAX 444-6836
ART COMPTON, DIVISION ADMINISTRATOR, 444-6754

TECHNICAL AND FINANCIAL ASSISTANCE BUREAU, TOM LIVERS, BUREAU CHIEF, 444-6776

State Revolving Fund - Wastewater and Water

Name	Phone # 444-	Training & Operation Problems	SRF Wastewater Loans	Facility Plans	SRF Drinking Water Loans	Eng Plan Review	Plant Inspections & CPEs	WWTP Effluent Spray Irrigation
Todd Teegarden Wastewater program manager	5324		X	X		X		X
Bill Bahr	5337	X					X	
Paul Lavigne	5321		X	X		X		
Mike Abrahamson	7343		X	X		X		
Tom Slovarp	5323		X	X		X		
Linda Hills	5316		X	X		X		
Gwen Pozega	5341		X	X		X		
Mark Smith Water program manager	5325			X	X	X		
Marc Golz	6770			X	X	X		
Gary Wiens	7838			X	X	X		
Terri Anderson	6777			X	X	X		

POLLUTION AND PREVENTION BUREAU, LOUISE MOORE, BUREAU CHIEF, 444-6749

Joe Meek	444-4806	Source Water Protection and Wellhead Protection
Russ Levins	444-0471	Source Water Protection and Wellhead Protection

WHAT IS SOURCE WATER ASSESSMENT?

by Joe Meek

Montana is required under provisions of the 1996 Federal Safe Drinking Water Act to carry out a Source Water Assessment Program. The program was developed to the greatest extent possible using public participation, input from public water systems (PWSs), and input from other stakeholders interested in source water protection issues. The Montana Department of Environmental Quality (DEQ) has been working on program development since early 1998 and submitted it to the U.S. Environmental Protection Agency (EPA) in January 1999 for review and approval.

This program may be important to you. ❶ If you are a public water system, you will receive a technical report describing your water source(s) sometime during the implementation period (1998 through 2002), or, you may be able to use your own contractor to have this work completed. ❷ If you are a property or business owner engaged in certain activities regulated by DEQ and located near a PWS, you may be identified on a map provided to the PWS intended to encourage communication and cooperation between the PWS and those that may impact the water resource. ❸ If you are a consultant working on environmental issues, you may find opportunities to connect this program to your existing work. ❹ If you are a user of a public water system, you may see benefits from a program that will make information about your water supply readily available to you. ❺ In a nutshell, we Montanans generally enjoy good, clean, high quality water. This program will help keep it that way.

I. Program Objectives:

1. ***Identification of the source(s) of water used by PWSs.***
Source water protection areas are delineated for ground water and surface water sources. This is a technical process that considers characteristics of the aquifer or watershed and the PWS intake in order to identify the land area that contributes recharge to the hydrologic or hydrogeologic system above or upgradient from the PWS well or intake structure.
2. ***Identification and Inventory of Potential Contaminant Sources***
Potential significant contaminant sources within the source water protection area are identified. Regulated contaminants of concern in Montana include nitrate, microbial contaminants, and certain fuels, solvents, herbicides, pesticides, and metals. Potential sources of these types of contaminants include septic systems, animal feeding operations, underground storage tanks, floor drains and sumps, and certain land use activities.
3. ***Assessment of the Susceptibility of the PWS to those identified potential contaminant sources.***
A susceptibility assessment consists of evaluating the integrity of the well or intake and relative threat posed by identified potential contaminant sources. A determination of relative susceptibility will be made for each identified potential contaminant source within the source water protection area.
4. ***Make the results of the delineation and assessment available to the public.***
Source water assessments must be made available to the public. A combination of means will be utilized including consumer confidence reports, SWP Internet site, posting at public libraries, posting at local health department, and others.

II. Program Highlights:

- The program is applicable to all public water systems and types of water sources.
- The program prescribes methods and criteria for delineating source water protection areas and assessing the susceptibility of public water systems to contamination.
- The program was developed by the Montana DEQ with input from an advisory council and the public.
- The program is subject to EPA review and approval prior to implementation. The deadline for submittal of the Montana program to EPA is 02/05/99. Comments were received through December 31, 1998.
- Delineations and assessments will be provided to each PWS by or through the Montana DEQ using dollars set aside by Congress for this purpose.
- Delineation and assessments will be compiled into a map and text report for each PWS.
- PWSs will receive a draft delineation and assessment report for review before it is made public.
- Assistance is available to PWSs to help them utilize the delineation and assessment report to develop local source water protection plans. Participation in this part of the program will remain voluntary.

III. The Montana Source Water Protection Program Document Is Available for Your Review

Here are two ways to obtain the document:

- ▶ You can read or download the document via the Montana Source Water Protection Internet site at: <http://water.montana.edu/SWP/assessment>
- ▶ You can request a paper copy by contacting Joe Meek at DEQ at (406) 444-4806 or Russ Levens at (406) 444-0471.

IV. Where to Go From Here?

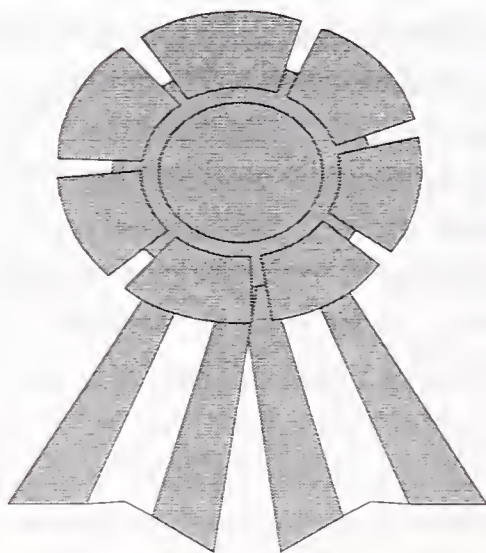
If you're interested and qualified, you may be able to complete your own delineation and assessment (or use your own contractor-engineer/hydrogeologist). Contact Joe Meek at DEQ to find out what options are available. Once you have completed an assessment report, you may have compelling reasons to move forward with developing a source water protection plan. This locally developed plan is intended to help manage potential sources of contamination and lead to long term protection of your water supply. DEQ (and others such as Montana Rural Water Systems) can help you get started on developing a source water protection plan. Also, the "*Montana Source Water Protection Technical Guidance Manual*" (1998) is available as a detailed reference to help you with plan development.

BEDELL AWARD

Presented to Bill Bahr

The Arthur Sidney Bedell award was presented to Bill Bahr last spring at the annual meeting of the Montana Water Environment Association. This award is given to those MWEA members in recognition of extraordinary personal service to a Member Association of the Water Environment Federation. Bill Bahr has worked in the wastewater profession for many years in Montana, starting his career at the Great Falls wastewater plant. He is presently working at the Montana Department of Environmental Quality (DEQ) in the Planning, Prevention and Assistance Division. Most operators of wastewater systems throughout the state have experienced Bill's good humor, wit, and knowledge in the wastewater field through his endeavors in operator training and assistance. Bill served the MWEA Board as president of the Association in 1995. Following that, he served as National Director of the organization for three years with his term ending in 1998. In looking at Bill's work at the DEQ, his service at the Montana Environmental Training Center, and his past roles with MWEA, it is obvious that he met and exceeded all the criteria for the Bedell Award as a wastewater professional. Congratulations, Bill, for a job well done!!

Sidney Arthur Bedell was the second president of the Federation and was a leader in developing and promoting sound wastewater treatment engineering practices in the United States early in this century. In Montana, this prestigious award is given every three years to an association member in honor of exemplary service to the Association and the parent organization.



THE VIEW FROM EPA

U.S. EPA-Montana Office
301 S. Park, Drawer 10096
Helena, MT 59626
(406) 441-1140



Small City with Big Pretreatment Issues

Pretreatment programs are familiar territory to Montana's largest cities. But as the City of Livingston discovered, even an area with a population of 7,000 people can take a big hit from industry and businesses.

As Steve Briggs, Livingston Public Utilities Superintendent, states, "You have to educate people every couple of years on what they should and shouldn't put in the sewers."

Steve should know. Over the years, Livingston has had the railroad, the Park Co. Incinerator, an industrial laundry, and numerous commercial kitchens connected to the Publicly Owned Treatment Works (POTW). At one point in 1995, sludge characteristics were "really, really

bad," Briggs claims. When metals in the sludge were too high to qualify for land application, the City landfilled the waste and sent the industrial laundry the bill for \$10,000.

A pretreatment program requiring that sewer users *pretreat* industrial wastewater is required of towns with POTW flows greater than five million gallons per day. Pretreatment also is required where industries may cause pass through or interference at the POTW, or where industries fall under a federal effluent standard. Programs typically include local ordinances, permitting, limits on pollutants the POTW will accept, and enforcement, all developed with technical assistance from EPA. However, any town can educate sewer users that pretreating waste is their own responsibility, not the taxpayers.

Monitoring Calendars a Hot Item

For the first time, public drinking water systems on tribal lands may meet all monitoring requirements in 1999.

Midwest Assistance Program's Lee Michalsky credits the progress to one-on-one operator training, ensuring that money is allocated for sampling, and new monitoring calendars, issued by EPA in 1998.

The calendars are customized for each system and list on a single sheet parameters to sample for, due dates, and a column of tips and suggestions. The calendars also show the past five year's worth of sampling performance.

With intensified training and issuance of the calendars, sampling compliance has been improved dramatically according to Lee. He explains that EPA's tracking system was previously "reactive, not proactive."

Perhaps no system typifies the improvements more than the Bureau of Indian Affairs Boarding Dormitory on the Blackfeet Reservation. After conducting a sanitary survey and setting the system up with a monitoring calendar, all sampling was completed within two months.

Welcome to Art Howell

There is welcome new help in the Montana office. Art Howell joined the drinking water program in February 1998, after a long career in the U.S. Forest Service developing Land and Resource Management Plans.

Art now manages the data for the 47 public water systems on Montana's seven Indian Reservations. He also assists EPA's Jay Sinnott and Lee Michalsky of MAP with technical assistance to system operators and in performing sanitary surveys. Art is looking forward to "getting out to more of the water systems" in 1999 and states that he likes most "meeting new people...and being able to provide assistance."

How to Reach Us

Drinking Water

Jay Sinnott, EPA	441-1140, x228
Art Howell, EPA	441-1140, x288
Lee Michalsky, MAP	494-1858

Wastewater

Gwen Jacobs, EPA	441-1130, x235
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Y2K COMPUTER BUG

Experts say 90% of existing business computer systems will be affected by year 2000 problems. This includes water/wastewater plants and systems in many ways. Is your power supplier ready? Will pumps and motors go down? This article is put out by the EPA and gives a summary of the Y2K problem as well as a six (6) step procedure to follow.



WHAT is the problem? Most people have heard that a major computer problem is on the horizon for January 1, 2000. The issue is called Year 2000, Y2K, or the "Millennium Bug." Many computerized functions require recognition of a specific year, day and time, but most computers and computerized equipment recognize only the last two digits of a year's date.

Therefore, when the calendar changes to the year 2000, many computers and equipment with embedded computer chips will have difficulty interpreting the correct date; they may interpret the year to be 1900 or some other year. A number of things are likely to happen: some computers and equipment will "crash"; others will operate erroneously; others may simply stop and need to be restarted; some may create data that looks correct but in reality contains errors; and some may continue to operate correctly.

WHY is the Environmental Protection Agency (EPA) concerned? As part of its mission to protect public health and the environment, EPA helps assure safe and clean water for all Americans by setting water quality standards for the nation's drinking water and wastewater treatment plants. These plants are owned and operated by local government or private utility companies. Many of these plants operate with some level of computerization. Thus, monitoring, operations and maintenance, communications, laboratory analysis and reporting are areas that should be assessed for potential Year 2000 computer-related problems that could ultimately lead to public health and environmental problems.

It is important that utilities that have not already done so make any necessary changes and develop contingency plans that allow for "business as usual" on January 1, 2000.

WHEN is action needed? Time is running short. Action is required now. Drinking water and wastewater treatment plant owners and operators are, or should be, aggressively acting now to protect their systems from "Millennium Bug" caused failures on January 1, 2000.

HOW should a utility address this problem? EPA recommends a six step approach to help ensure normal operations on January 1, 2000. These steps are:

AWARENESS -- As Soon As Possible

First, owners and operators of drinking water and wastewater treatment plants need to be aware

that the problem is pending. There are numerous articles, newsletters, trade conferences and websites that address this issue. EPA's Y2K Water Sector Website address is www.epa.gov/year2000/ow.htm. It provides basic information as well as links to many other useful websites.

ASSESSMENT -- As Soon As Possible

Owners and operators should locate and list all computerized equipment and equipment with embedded computer chips in their systems and determine which are vulnerable. They can refer to equipment owners manuals and equipment manufacturers, plus a general EPA checklist of potential trouble spots, available at the website noted above.

Owners and operators should also meet with representatives of service and supply chain providers such as power and telecommunications utilities and chemical companies to ascertain their readiness and the degree of risk posed by possible external Y2K failures. In addition, power and telecommunications utilities should provide for restoration of power to drinking water and wastewater utilities at equally high priorities in their emergency contingency plans.

CORRECTION -- by 6/30/99

Correction can involve modification, repair or replacement of systems or components. There are diagnostic programs available as well as consulting firms and computer specialists that can assist in making the necessary corrections. Some of this information is also available on Year 2000 websites.

CONTINGENCY PLANS -- Draft by 6/30/99; Final by 9/30/99

As a back up measure, all systems should have a contingency plan to deal with unforeseen problems and emergencies, including possible external service and supply failures. Among other things, these plans should address how systems would be manually operated until the computerization problems are resolved. These plans should be developed simultaneously with the correction phase, and revised after the testing/validation phase.

TESTING/ VALIDATION -- by 7/31/99

Running tests on the system to make sure the corrections fixed the problem is the next step. These tests should be run as soon as possible after assessment and correction in case additional changes need to be made. Independent verification of the test may be appropriate in some cases.

IMPLEMENTATION -- by 9/30/99

Once the systems are readjusted to operate correctly, they should be retested and revalidated. Then they are ready for implementation.

WHERE is help available? In addition to the EPA Year 2000 website (www.epa.gov/year2000/ow.htm), information and assistance may be available from trade and professional associations, journals and websites. The manufacturers and industry experts can provide advice on specific systems. You can also write to EPA Office of Water (4204), 401 M St., SW, Washington, DC 20460 to request copies of this fact sheet, other written materials and additional information.

ENFORCEMENT UPDATE

by David Rise
Community Services Enforcement Liaison

Complaint Response

Public Water Supply System complaints are made to the enforcement division of the Montana Department of Environmental Quality (DEQ) through several routes. A complaint reporting form is accessible from the department's web site at: www.deq.state.mt.us/enf/spill.htm. This web page allows a user to download a copy of the complaint form, gives directions on completing the form, and supplies the enforcement division's mailing address and fax number. Complaints can also be made by calling the enforcement division at (406) 444-0379 between 8:00 a.m. and 5:00 p.m. on regular business days. For calls during non-business hours, a message may be left and a phone call will be returned during the next business day.

Upon receipt of a complaint, enforcement division staff complete a complaint form, if not yet done, and the information is entered into the enforcement database. At this point the complaint is Active (A) and under investigation by enforcement division staff. The complaint status changes upon completion of the investigation. Complaints that did not have enough information provided to investigate are Closed Not Enough Information (CNEI). Close No Violation (CNV) indicates that an enforcement division investigation determined no violation occurred. Closed Referred (CREF) complaints are those which are referred to an outside agency for resolution. Complaints where a violation occurred and were resolved by the enforcement division are Closed (C).

Some investigations result in the complaint status being changed to Active Referred (AREF). In these cases, the complaint is referred to another DEQ program, such as the public water supply program, for investigation and follow up. If follow up by the program resolves the complaint, it is then Closed By Program (CPRO). If the program cannot resolve the complaint, e.g., by working with the system owner or operator, the complaint is then closed by initiation of an Enforcement Request (ER). Then an enforcement case is begun which may result in administrative or civil action against the violator.

During 1998, the DEQ received 1091 complaints of which 17 were public water supply system complaints. Of the 17 complaints, 12 were closed and five remain open. The complaint status breakdown follows:

3	CNV
2	C
1	CREF
6	CPRO
5	AREF

Questions concerning complaints or case procedures can be directed to David Rise at (406) 444-2411.

MSAWWA / MWEA CONFERENCE PLANNED FOR APRIL 29-30, 1999

The 1999 Joint Annual Conference of the Montana Water Environment Association and the Montana Section of the American Water Works Association will be held at the Holiday Inn in Billings, April 28-30, 1999.

The MWEA preconference, "Measuring, Benchmarking and Monitoring Utility Performance," will begin the activities on Wednesday, April 28th. Following the preconference, the vendors will sponsor an icebreaker on Wednesday evening to kick-off the general conference activities. The general conference, "Stewardship of Public Health and the Environment," will be all day Thursday, April 29th, and Friday morning, April 30th.

This will be a conference you won't want to miss. The Billings Host City Committee is planning both the companion activities during the conference and the entertainment at the Thursday evening banquet. Please fill out the registration form in this issue and send it in early. Not only will you save money, you'll be eligible for the early bird prize drawing!

MWEA / MSAWWA LIFETIME ACHIEVEMENT AWARD

by Jim Melstad

The Montana Sections of the Water Environment Federation (MWEA) and the American Water Works Association (MSAWWA) have recently formed a joint committee to consider nominations for the Lifetime Achievement Award. The intent is to recognize association members who have made significant contributions over a lifetime to the fields of wastewater treatment, water supply, environmental protection or public health. Any past or current member is eligible, but nominees must be retired or semi-retired. Annual nominations will be solicited from members, but the frequency of the actual awards may vary depending upon nominations received. The joint committee will review nominations and make recommendations to the boards of both associations. Both boards must approve an award. If approved by both boards, an award(s) will be presented at the annual joint conference.

Contributions by nominees must be long-term in nature. For example, an eligible member may have accumulated many different achievements while working in many jobs. Conversely, another eligible member may have dedicated an entire career to one position. Again, the significance of this award is to recognize a lifetime of commitment and achievements in our industries.

Nomination forms will soon be available. Association members are encouraged to submit nominations for eligible candidates. If you wish to submit a nomination, please contact Dean or Carolyn Chaussee at 505 South Roberts, Helena, MT 59601 (phone 406-443-5388) to request a nomination form. You may contact the committee members if you have any questions: Paul Montgomery (449-7913), Bill Bahr (444-5337), Donna Jensen (933-8841) or Jim Melstad (443-4339).

GROUNDWATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER

By Mike Brayton/Hydrogeologist

The Department of Environmental Quality (DEQ) Public Water Supply Section is currently evaluating groundwater sources that are directly withdrawing surface water through well or spring sources covered by The Groundwater Under the Direct Influence of Surface Water Act of 1986.

A surface water is defined as any water that is open to the atmosphere and is subject to surface runoff. This includes perennial streams, rivers, ponds, lakes, ditches, and some wetlands, as well as intermittent streams and natural or artificial surface impoundment's that receive water from runoff.

Groundwater sources include water obtained from department approved dug, drilled, bored or driven wells, infiltration lines (including Ranney collectors), and spring boxes.

The Groundwater Under the Direct Influence of Surface Water (GWUDISW) Program is designed to identify those water systems that use or can potentially use surface water as a drinking water source. The GWUDISW determination process begins with the Water Quality Division (WQD) completing a Preliminary Assessment (PA) form for each existing groundwater source that serves a public water system. A PA uses a point system to evaluate the source water. The PA's point system is based on well construction, depth to static water level, screening intervals, proximity to surface water bodies, historical organism contamination and historical microbiological contamination. Based on the results of the PA, sources which score less than 40 points will be classified as groundwater whereas sources with higher scores will need further analysis, source rehabilitation, or additional source information to complete PA.

In the evaluation of source water and its relation to surface water, two questions must be answered. First, does a hydraulic connection exist between the groundwater source and surface water? Second, if the answer to this first question is "yes", are there surface water organisms present in the groundwater?

A Hydrogeologic Assessment (HA) and/or a Water Quality Assessment (WQA) will be required in order to answer the first question. A hydraulic connection is defined as a pathway through which water can travel between an aquifer and surface water. The HA will look at geology, groundwater flow systems, surface water bodies, well construction and aquifer characteristics to determine if a hydraulic connection exists between the water source and a surface water body. If the HA indicates that a hydraulic connection to surface water does not exist, the source is classified as groundwater and further assessment is not needed.

In general, groundwater exhibits only minor variations in chemical and physical parameters. Surface water tends to experience more substantial variations as a function of season, rainfall and snowmelt events. If groundwater is connected to surface water, the groundwater quality should vary with surface water quality. Weekly monitoring of temperature, turbidity, and specific conductivity or pH will be required for a maximum of twelve consecutive months on sources undergoing the WQA. These parameters will be monitored on both the groundwater and the nearby surface water source. If the data from the groundwater shows little or no correlation with the surface water (i.e., a "positive" result) or the results are ambiguous, a Microscopic Particulate Analysis (MPA) will be required.

MPAs are used to determine if surface water organisms are present in groundwater. Groundwater under the direct influence of surface water is indicated by the significant occurrence of "...insects, algae, or other large-diameter pathogens. The document arrives at a risk factor based on the number of the various bio-indicators, i.e. *Giardia*, *coccidia*, *diatoms*, *algae*, *insects/larvae*, *rotifers*, and *plant debris*. Based on the risk factor associated with the results of each MPA, the source will receive a designation as a low, moderate, or high risk of surface water contamination. In completing the MPAs it will be necessary for the public water supply system to conduct between two and four analyses, per groundwater source, over 12 to 18 months. The MPAs will be performed during the periods of the year when surface water most likely influences groundwater, such as in the spring and fall. For each MPA the public water supply system will collect the sample and send it to a qualified laboratory. Based on MPA lab results a source that has shown a connection to surface water or other contamination may be required to furnish water treatment, such as full-time chlorination or filtration, for the potential contamination.



MONTANA'S COMPLIANCE STRATEGY FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFO)





by Tim Byron, Permitting

The Montana Department of Environmental Quality (DEQ) is responding to a joint initiative by the Environmental Protection Agency (EPA) and the United States Department of Agriculture (USDA) to address the environmental and public health impacts associated with animal feeding operations. The initiative seeks to improve the remaining 40 percent of the nation's waterways that, based on state assessments, do not meet goals for fishing and swimming. EPA acknowledges that tremendous progress has been made in controlling pollution from factories and sewage treatment plants, but runoff from city streets, agricultural activities, including animal feeding operations, continues to degrade the environment and puts drinking water supplies at risk.

USDA and EPA recognize that farmers and ranchers are primary stewards of many of the nation's natural resources and have played a key role in past efforts to improve water quality. Farmers and ranchers are important partners with the agencies in implementing measures to protect the environment and public health. The agencies recognize that a viable livestock industry is essential for economic stability and the viability of many rural communities.

As part of the initiative, EPA is requiring states, such as Montana, with approved discharge permit programs, to submit their own strategies for achieving compliance with water quality regulations that apply to animal feeding operations. DEQ will be inviting comments on the draft strategy in January or early February 1999. Comments will be incorporated into a final strategy for review by EPA. Those having questions about the strategy or wishing to have a copy of the draft when it becomes available for review, should contact Tim Byron at the DEQ Water Protection Bureau at 444-1454.



MONTANA WATER ENVIRONMENT ASSOCIATION

DIRECTOR'S REPORT

by Scott Anderson

Welcome to 1999 and a prosperous new year! I am writing this report as the incoming Director for the Association, as replacement for Bill Bahr. Bill is a tough act to follow and I know he was a great representative of our Association as National Director. This job requires time, effort and commitment to do it well and I know that Bill invested all of these traits into the position during his three-year tenure. Thanks Bill!!

I attended my first national conference in Orlando as Director which was truly a learning experience for me. The Water Environment Federation takes on a whole new meaning when you attend a conference with almost 17,000 attendees and 755 exhibitors. The Federation is seriously promoting an international interest in the organization that was evident at the conference. Many attendees, speakers, exhibitors and member associations from numerous foreign countries were at the conference. I attended an interesting presentation on lagoon systems utilized in a South American country that compared the current status of technology in this country with what is occurring in South America. It made me realize that sharing technology between countries is needed and is being encouraged through the efforts of the Federation to incorporate new member associations into the organization on a worldwide basis.

Some of the more important issues discussed at the Director's meetings at the conference related to the Federation's budget, dues increase, the Professional Wastewater Operators Division and the plight of the small members' associations. Apparently, the portion of the Federation budget supported by the membership dues is declining primarily due to relative static membership levels in the U.S. The Federation is seeking membership outside of the United States to counter the decline in growth. Additionally, a dues increase was proposed and passed by the Board of Directors to also help bolster the budget. Dues for individual memberships will go up \$3.00 per year for Active memberships and \$4.00 per year for the Operations category of membership.

Another controversial issue on the agenda pertained to the maintenance of a separate division within the organization for Professional Wastewater Operators (PWOD), complete with a separate governing board. For the last several years, the Federation has been actively promoting the involvement of wastewater operators in the organization and created a separate entity within the organization specifically for the Operations class of membership. Due to the cost of maintaining this separate Board and the general thought that the Operators Divisions' members should be integrated into the general membership of the organization, it was recommended that the PWOD governance structure be dissolved. This recommendation was adopted by the WEF Board.

Of particular interest to us in Montana was a discussion on the problems of small member associations developing an adequate budget to support their basic functions. Most of the membership dues paid to WEF are retained at the national level with only \$10.00 per member returning to our association. Consequently, small associations have a difficult time generating enough revenue to support the bare minimum functions of their organizations. Most of the revenue supporting MWEA comes from our annual conference and any other specialty conferences. The WEF Board discussed the suggestion that

the national organization provide some additional support of smaller associations. While this concept will be further evaluated through committee work, nothing was decided at the 1998 meeting to implement the idea. It is promising that this concept is being discussed at the national level.

On a more personal level, one of my goals as national director over my three-year term will be to work toward making sure that our budget is sound and our Association revenues equals or exceeds our budgeted expenses. I would also like to see our committees become more active in functions other than working to generate income for the Associations annual budgeted needs. While income generating work is very important, it seems to consume the limited time and energy of active Board and Committee members, leaving little time for other activities. A more stable source of revenue and realistic budgeting of expenses within the organization may allow more time for committee work. Lastly, I believe that the Association should participate in activities of the legislative session, particularly those discussions regarding the recently passed constitutional initiative, CI-75. This initiative will have a profound impact on all aspects of the construction and operation of water and wastewater facilities in Montana.

I appreciate the opportunity to serve in the position of MWEA National Director. If you have any questions or comments on the Montana Association or the National Federation, please give me a call at 449-7913 and I will do my best to see that they are addressed.

Scott Anderson
516 North Park, Suite A
Helena, MT 59601



MESSAGE FROM THE PRESIDENT OF MWEA

by Mike Jacobson

I hope everyone reading this is having a safe and productive New Year. I trust that we are all making plans to attend the annual joint conference of the Montana Water Environment Association and the Montana Section of the American Waterworks Association April 28 - 30 in Billings. We again have an excellent conference and pre-conference planned. It promises to be as informative and entertaining as ever.

For reasons unknown to me, I have had the distinct pleasure of serving as the president of MWEA for the past year. As I sit here composing this I find it hard to believe I have had the opportunity to be involved with this group of professionals. There is much to be gained by this association and I encourage everyone to become active in this organization. You'll be glad you did.

The coming year promises to be full of challenges. Three particular issues come immediately to mind: The Clean Air Act's Risk Management Program, Year 2000 preparedness, and the affects of CI-75. In dealing with these issues, and all of the issues specific to each of us, it helps to share information, problems, and solutions with others that are struggling with the very same issues. This is the very reason to become involved in Montana Water Environment Association and to attend the annual conference.

I've found that MWEA and its members are dedicated to sharing information and experiences. The organization offers excellent opportunities for networking with peers and learning from the speakers at the conferences that are sponsored both locally and nationally. Though I have been a member for years, my experience on the executive board has really brought these potential benefits home to me.

Another benefit to attending the conferences is exposure to the vendors. It seems that each year the vendor display becomes larger and more diverse. This is a real opportunity to discuss problems with people that can help you solve them. The vendors can also help you keep up with new technologies and let you know what other communities are doing to address their problems.

This year's joint conference again promises to be a great learning experience. As I write this I don't have the details immediately at hand, but the agenda and registration forms will appear elsewhere in this issue of the Clearwater. The pre-conference will be sponsored by MWEA again this year (we alternate with MSAWWA in hosting the pre-conference) so I'm sure it will be as exciting as ever.

And, not that you need another reason to attend, there are always prizes, entertainment and a banquet. To top it all off, the seminars will go towards CEC requirements. So, you see, there are many reasons to attend and I expect to see all of you there.

PUBLIC WATER SUPPLY DATABASE IMPROVEMENTS

by Jim Melstad

Over the past several years, Public Water Supply (PWS) Section staff have spent a lot of time making improvements to the PWS database. Accuracy and completeness of information have greatly improved. In spite of these efforts, we must continually update the database with new sample analysis data, new sources, and changes to system ownership, mailing addresses, etc.

Our current database was created in a software called *Advanced Revelation*. This database works well by itself, but it does not work well in a Windows environment nor is it readily available to outside users. Also, finding support for improvements and maintenance of an *Advanced Revelation* database is increasingly difficult.

In order to address these problems, the PWS Section plans to proceed with creation of a new database in *Oracle*. Oracle has become the standard for state government, and for the Department of Environmental Quality (DEQ). DEQ recently completed a study to develop a department-wide database plan. The PWS database would be one of the first database development efforts to fit into this plan.

The goals of this effort are as follows: (1) to develop a database system that will be available to water system operators, owners and certified laboratories via the Internet; (2) to allow development of a geographical information system (GIS) data layer of public water supply information that will be available to the public via the Internet; (3) to develop a database system that will be compatible with and supported by state government, and; (4) to develop a database system that will be more compatible with the Environmental Protection Agency (EPA) reporting requirements. Additionally, we plan to coordinate this effort with another PWS Section effort to improve source and entry point information in our database.

If you have any suggestions or comments on this effort, please let me know. This is a very important (and expensive) project for us, and we want to do it right the first time. My phone is (406)444-5315, FAX 444-1374 and E-mail address is: jmelstad@state.mt.us.

UPDATE ON GROUND WATER RULE

by Joe Meek

The Environmental Protection Agency (EPA) has the responsibility to develop a ground water rule which specifies the appropriate use of disinfection to assure public health protection as described in section 1412(b)(8) of the SDWA.

To meet this requirement EPA is working with stakeholders to develop a Ground Water Rule (GWR) proposal by March 1999, and a final rule by November 2000.

The overall goal of the Safe Drinking Water Act (SDWA) is to establish standards that will protect public health. The Ground Water Rule is designed to protect against pathogenic bacteria and viruses in source water and against growth of opportunistic pathogenic bacteria in ground water distribution systems, and to mitigate against any failure in the engineered systems, such as cross-connections or sewage infiltration into distribution systems.

The following information is provided to keep interested PWSs updated on EPA's progress with development of the Ground Water Rule. **Please note that new responsibilities apparently will fall on PWSs and DEQ in implementing the final rule which is still in development.**

States must conduct sanitary surveys for all ground water public water systems, whether they disinfect or not, every 3 years (for CWSs) or 5 years (NCWSs). States must submit a plan showing how they will prioritize systems and a timetable for conducting the surveys. Systems serving sensitive sub-populations (elderly, immuno-compromised) must be among the first surveyed.

Systems must correct the significant sanitary deficiencies identified by the States within a certain time frame or treat to 4-log removal.

States must conduct ground water sensitivity assessments for all their ground water systems which do not treat to 4-log removal. Systems will be required to monitor their source waters monthly if located in an unconfined karst, gravel/cobble, or fractured bedrock aquifer, or supplied by springs (many ground water sources in western and central Montana fall under these categories), or if determined to be susceptible to microbial contamination through a source water assessment under a SWP Plan.

Systems monitoring their source waters monthly can reduce monitoring to quarterly if there are no confirmed positives of fecal contaminants after one year. States must investigate any source water positive and the system must fix or treat to 4-log removal within 90 days. A total coliform positive in the distribution system triggers one source water sample for fecal contamination.

4-log treatment may be attained by most systems serving most customers if a disinfectant residual is maintained in the distribution system. All ground water systems treating to 4-log must monitor treatment effectiveness.

A draft preamble containing these proposed requirements went to the GWR Workgroup for review in the third week of November 1998. The current schedule is to publish a proposed rule in September of 1999, with the final rule published in November 2000.

DEQ will make continue to make information accessible as it becomes available. Contact Steve Ainsworth, EPA HQ, 202-260-7769 or you can also check out EPA's Ground Water Rule Internet site at:

<http://www.epa.gov/ogwdw000/standard/gwr.html>

“WORKING FOR QUALITY: EFFICIENCY & COMPETITION IN MONTANA WASTEWATER AND WATER UTILITIES”

Benchmarking and Risk Communication

1999 Preconference Seminar

Sponsored by the Montana Water Environment Association

April 28, 1999

Now more than ever with the changes in Montana's public utilities sector, including CI-75 and energy deregulation, wastewater and water utilities need to stay efficient and competitive and be able to effectively communicate with the public.

This seminar will provide: an overview of issues and trends; what wastewater and water utilities managers and employees need to know; what you can do to say ahead in a competitive marketplace; and how to communicate effectively. Topics covered include: benchmarking, improving performance and reducing costs, media relations and relations with governing bodies (councils and boards), and risk communication.

Speakers will include nationally recognized experts and local utilities representatives. The morning session will focus on Utility Benchmarking with speakers and a panel focusing on increasing your utility's efficiency and competitiveness. Dr. Peter Sandman, a nationally recognized expert, will present a video on Risk Communication at the afternoon session.

CALL FOR PAPERS

The Small Flows Journal

Papers are now being accepted for upcoming issues of ***The Small Flows Journal***, the only juried technical journal devoted specifically to small community wastewater issues (i.e., communities with populations under 10,000 or communities handling less than one million gallons of wastewater flows per day).



For additional information about the journal, manuscript submission guidelines, and publication deadlines, contact Cathleen Falvey, editor, at 1-800-624-8301, ext. 5526, or mail to Editor, ***The Small Flows Journal***, National Small Flows Clearinghouse, West Virginia University, P.O. Box 6064, Morgantown, WV 26506-6064.

FREEZOUT AND PRIEST BUTTE LAKES

by Carole Mackin

The water quality improvement effort for Freezout and Priest Butte Lakes is unique in that the area is a state wildlife management area where concerns for water quality are as important as those for waterfowl habitat. A primary management goal of Montana Fish, Wildlife and Parks (FWP) is to maintain the water quality of the Teton River. The water quality improvement effort has been underway for 15 years.

About the Watershed...

Approximately 79,000 acres of land form a closed basin containing Freezout and Priest Butte Lakes. These lands are located in southern Teton County which contains some of the most productive agricultural lands in Montana. Land uses in the Freezout watershed include irrigated and dryland agriculture, wildlife habitat on the Freezout Lake Wildlife Management Area, recreation such as hunting and bird watching, the community of Fairfield, a rural airport, an extensive irrigation project, and livestock grazing. State Highway 89 runs just east of Freezout Lake and just west of Priest Butte Lake. About 80% of the watershed is privately owned; the remainder is federal and state lands.

The wildlife management area's 12,000 acres of water, fields, and wetlands (of which 6,300 acres are federal public lands) may host up to a million waterfowl at one time including geese, swans, ducks, gulls, loons, cranes, and shorebirds. Raptors, upland game birds, and migrating songbirds are also found. Big game and other wildlife inhabit the area which is open for public use throughout the year.

Prior to building the Greenfields Irrigation Project, Freezout Lake was an alkali lake bed that dried up on a regular basis. Historical records document buffalo wallowing in the lake 100 years ago and include three different (each colorful!) accounts of how the area got its name. As irrigated agriculture expanded upgradient to the east in the early 1900s, irrigation return flows and drainage from the Fairfield Bench increased flows into the closed basin to the point of flooding nearby roads, railroad tracks, and farmland. Water levels fluctuated dramatically and officials talked of draining the basin into the Teton watershed. When migrating waterfowl were drawn to the lake, Fish and Game officials and the federal Bureau of Reclamation and Bureau of Land Management (BLM) agreed to cooperate on the control of water levels through the development of a waterfowl management area.

Land acquisition began in 1953 and an outlet ditch from Freezout Lake to Priest Lake was constructed. From Priest Lake a series of underground culverts and pipes releases water into the Teton River. Workers constructed ponds, interconnected by dikes with water control structures, and nesting and loafing islands in the ponds. They planted tall grasses and legumes for dense nesting cover and shelterbelts to provide cover for upland game birds. The effort improved wildlife habitat and flood



management, but created other challenges from a water quality perspective. Low quality irrigation drain water and inadequate amounts of fresh water made it difficult to maintain appropriate standards in the lakes and the water released to the Teton River.

Freezout and Priest Butte Lakes are classified the same as the Teton River, which is "B-2" waters between the confluence of Deep Creek and the I-15 bridge. This means the water is:

suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply (ARM 17.30.623).

DEQ evaluated the quality of the water draining into the Teton from Freezout and Priest Butte Lakes in 1994 during a follow up inspection to assure compliance with the load allocation for salinity that was assigned to FWP in 1984. Agricultural land uses were thought to be contributing to these water quality concerns, including both irrigated and dryland crop production.

Defining the Problem

Since the development of agriculture in the Fairfield Bench area to the east, Freezout Lake, with no outlet, became a natural sump for elevated groundwater flow and irrigation system drains. The Greenfields Irrigation system uses Sun River water which eventually drains into the Teton River via Freezout and Priest Butte Lakes. When the drain was constructed from Priest Butte Lakes to the Teton River, highly saline waters were added to the river causing concerns from irrigators using the water in the Teton River. FWP, landowners, and irrigators contacted the Department of Health and Environmental Sciences (DHES) and asked the department to protect the beneficial uses of the water in the Teton River.

Assessment

State staff assessed the problem and worked with wildlife area managers to develop a management plan. DHES determined that the discharge to the Teton River must not increase the salinity level of the river above 1,000 micromhos per centimeter at 25 degrees centigrade.

This agreement alleviated some concern, but did not address other water quality issues. The City of Fairfield, which discharges wastewater to Freezout Lake, FWP, and Greenfields Irrigation District have coordinated with the DEQ, the USGS and the Montana Department of Agriculture (MDA) to further address water quality pollutants going into and coming out of the basin.

The city's wastewater discharge permit is up for renewal. The discharge to the lake is both beneficial as well as potentially harmful. The discharge adds fresh water needed to reduce the salinity of the lake water, but, as with any waste water discharge, a safe level of nutrient loading must be authorized by a general discharge permit.

The FWP has just completed further water management assessment and planning. The BLM has adopted grazing allotment management plans for four grazing allotments west of the lakes. A 160-acre allotment is grazed yearlong and is authorized 49 Animal Unit Months (AUMs). The other three allotments, totaling 200 acres, are grazed from June 1 to September 30 and are authorized 30 AUMs.

Planning

The City of Fairfield, DEQ, FWP, MDA, BLM, the Greenfields Irrigation District, and the Teton River Basin Resource Group are working to address water quality issues in the Freezout/Priest Butte watershed, and the resulting discharge to the Teton system. The goals are to:

- improve the quality and minimize the impact of the discharge water from Freezout/Priest Butte Lakes to the Teton River;
- minimize adverse impacts to the biological communities of Freezout Lake from urban wastewater; and
- meet state water quality standards for salinity, chloride, and total dissolved solids.

The implementation of FWP's new management plan further improves water quality and quantity management in the Freezout/Priest Butte system. The City's discharge permit is up for renewal, which provides an opportunity to evaluate the system in the context of the other watershed activities. The BLM manages grazing allotments to minimize impacts to the wildlife management area. And, the irrigation district promotes water conservation measures that improve water quality. Each entity is more aware of and is looking at further options to minimize contributions of contaminants to the Freezout/Priest Butte system. The targets which have been adopted to address issues include:

- maintain levels of total dissolved solids in the Teton River at the State Highway 221 bridge at less than 700 mg/l (1,000 micromhos per centimeter at 25 degrees centigrade);
- replace 13 water control structures and remove sediment in Priest Butte Lake discharge canal;
- acquire water allotment for 787 acres of irrigated agricultural land in Freezout Basin as a fresh water source;
- repair and maintain the discharge valve from the wastewater lagoon to regulate discharge to meet permit limits for chlorides and total dissolved solids.

DEQ staff summarized the research and monitoring results and the planning documents listing the process, targets, and monitoring agreements described above, and intends to submit the plan to the EPA as a Total Maximum Daily Load (TMDL) allocation in compliance with the Federal Clean Water Act. The TMDL was presented for public comment at the annual meeting of the Teton River Basin Resource Group at the Dutton Legion Hall on January 12, 1999. The Teton River Basin Resource Group will consider the public comment and make a recommendation on a submittal of the TMDL. A response from EPA is expected 60 days after the TMDL is formally submitted.

HAVE YOU READ THE LATEST CONSUMER CONFIDENCE REPORT?

What Is a Consumer Confidence Report?

The Safe Drinking Water Act of 1996 required the EPA to develop and adopt a rule that would require all community water systems to develop and distribute a water quality report named the “Consumer Confidence Report” to their customers each year.

Who Is Required to Produce a Consumer Confidence Report?

All Community Water Systems must produce and distribute a CCR report once a year.

Is This For Real? When Was This Rule Adopted And When Do I Have to Produce My First Report?

The Consumer Confidence Report Final Rule was published in the Federal Register on August 19, 1998. The rule requires that your first report be distributed no later than October 19, 1999. In the year 2000, and each year thereafter, the report is due by July 1st.

What Is Required to Be in The Report?

The required information must include:

1. Name of the water system and the phone number of a contact person who can provide information and answer questions about the water system. Information about regularly scheduled board meetings where water quality issues are discussed.
2. Common name of the water source(s), list whether it is a groundwater, surface water or a combination of the two, and a location of the source(s), preferably using a map.
3. Definitions of key regulatory terms, such as Maximum Contaminant Level (MCL), Maximum Contaminant Level Goal (MCLG), Treatment Technique, Action Level, and Variance and Exemption, so that customers can understand the report. (Definitions are given by EPA for these terms).
4. Table or series of adjacent tables that report the levels of detected contaminants. Include data on regulated contaminants, unregulated contaminants for which monitoring is required, and results of monitoring that is required by the Information Collection Rule.
5. Information on Cryptosporidium, radon, and other unregulated contaminants detected through voluntary monitoring must be included.
6. Required additional health information: explanation of contaminants in drinking and bottled water and explanation of the vulnerability of some populations to contaminants in drinking water.

7. Information on Violations of National Primary Drinking Water Regulations. Violations include: monitoring and reporting of compliance data; record keeping of compliance data; filtration and disinfection prescribed by Subpart H; lead and copper control requirements; treatment techniques for Acrylamide and Epichlorohydrin; special monitoring requirements for inorganics, organics and sodium; and violations of the terms of a variance, an exemption, or a state or federal administrative or judicial order.
8. Information if the system is operating under a variance or exemption.

Do I Have to Mail a Copy of the Report to Every Customer?

All systems serving 10,000 or more customers must mail a copy of the report to each customer and make a good faith effort to reach those customers who do not get water bills, such as renters.

The Governor will likely grant a waiver that says water systems serving less than 10,000 customers won't have to mail each customer a copy of the report.

Systems serving more than 500 customers but less than 10,000 will have to publish the report in at least one local newspaper, notify their customers where they can get a copy of the report, and provide copies to anyone who requests one.

Systems serving less than 500 customers will have to provide notice at least once per year that the report is available upon request.

All systems must send a copy to the state no later than the required date and, within 3 months, mail a certification letter to the state that states the CCR was distributed to customers with information that is correct and consistent with compliance monitoring data previously submitted to the state.

This is a brief outline of the requirements of the Consumer Confidence Report Rule. A complete copy of the requirements can be obtained on-line at: www.epa.gov/ogwdw/ccr/ccrfact, www.awwa.org/ccrdatt.htm. Copies of the Rule can be obtained by calling EPA Safe Drinking Hotline at (800)426-4791 or calling the state Public Water Supply Section in Kalispell at (406)755-8985 or in Helena at (406)444-4400.

AWWA TELECONFERENCE FOCUSES ON DISTRIBUTION SYSTEMS

The next AWWA teleconference, "Operations & Maintenance: Tools and Technologies to Protect Water Quality in the Distribution System," will be presented on March 11, 1999. The teleconference will focus on two major aspects of distribution systems, cross-connection/backflow and main repair. Although utility personnel deal with these issues daily, this teleconference will review procedures to show how the job is done correctly.

An overview of possible problems in the distribution system will lead to discussions of: 1) how current and potential cross-connections can be evaluated; 2) which backflow devices to use in each situation for effective protection; and 3) how to develop a cross-connection program for your utility.

The discussions on main repair will include: 1) sanitary precautions; 2) when and where to disinfect, and which methods to use; 3) flushing with a focus on dechlorination for environmental compliance, and; 4) developing and implementing a sampling plan.

The program should be of interest to distribution system and water treatment plant operators, water quality managers, engineers and consultants, and governmental regulatory personnel.

The teleconference will be downlinked in Billings, Bozeman, Butte, Havre, Helena, and Missoula. All AWWA members will soon receive a flyer with more complete information. Others who are interested should contact Dean Chaussee at (406)-443-5388 to obtain a registration form.



NEW STAFF MEMBERS IN THE PUBLIC WATER SUPPLY SECTION

New Water Quality personnel at DEQ (pictured here from left to right) are Mike Brayton, Denver Fraser, Eric Minneti, Ryan Leland, Janet Cherry, and Tausha Smith.

The Community Services Bureau - Public Water Supply Section (PWSS) of the Department of Environmental Quality (DEQ) has added several new Water Quality personnel to the program. It has taken about six months to bring the section to full staff. These individuals will be glad to assist you in any way they can.

Tausha Smith is the newest employee in the Operator Certification Program and was hired in June 1998. She was employed with Capital Answering Service/Airpage in Helena since 1991 and was lead supervisor. Tausha is responsible for managing the operator certification database, continuing education credits, and handles any requests for information. Tausha enjoys camping, reading, and relaxing.

Ryan Leland started mid-September 1998 and is working in the Engineering Services program. He has a Bachelor of Science degree from Montana Tech in Environmental Engineering and has worked for a local consulting company. Ryan will be working with the Lead & Copper Rule, assisting with water system plan reviews, and will be involved in the Capacity Development Rule. Ryan enjoys hunting, fishing, and rugby.

Janet Cherry began working in July 1998 and also works in the Engineering Services program. She is no stranger to DEQ. Janet worked in the Subdivision Program from 1993 to 1996 reviewing submittals for adequate water, wastewater, and storm drainage systems. Janet has a B.S. in Agricultural Engineering from the University of Illinois, M.S. in Agricultural Engineering from the University of Idaho, and is a Professional Engineer in the State of Montana. She has worked for CH2M Hill, Montana Department of Natural Resources, and Stahly Engineering of Helena. Janet will be reviewing public water and wastewater systems plans, assisting with Phase II & V requirements, and will be involved in the Capacity Development Rule. Janet enjoys working part-time and being with her family.

Eric Minneti jumped in with PWSS the first day of Fall Water School, September 1998. He is a Water Quality Specialist and will be working with the Field Services Program. Eric has a Bachelor Degree in Water Quality Technology/Environmental Health from Montana State University - Northern. Eric did his internship training with the cities of Helena and Missoula and then was the water/wastewater superintendent for the Town of Stanford. Eric will be involved with operator training, groundwater chlorine residual monitoring, sanitary surveys, and assisting with the Consumer Confidence Reports. Eric enjoys hunting, fishing, and traveling around Montana.

Mike Brayton is our newest employee in PWSS, joining us in November 1998 while still working on his Masters. He attended the University of Wyoming and received his BA from the University of Montana in Geology. He will have his MS in Hydrogeology from Montana Tech by the end of January, 1999. Mike has worked a variety of jobs throughout his career. Mike is responsible for Ground Water Under the Direct Influence of Surface Water Determinations, Non Degradation, and groundwater quality projects in the Field Services Program. Mike enjoys hunting, fishing, and spending time with his boy.

INTRODUCING

Public Water Supply Section Staff



Included from left to right (bottom to top): Rick Duncan, Rick Cottingham, Janet Cherry, Paula Tocci, Debra Williams (Contracted Staff), Mike Brayton, Tausha Smith, Sara Williamson, Eric Minneti, Shirley Quick, Terry Campbell, Denver Fraser, Jon Dilliard (Bureau Chief), John Camden, Sandi Ewing, Chris Bristow, Gino Pizzini (Contracted Staff), Tom Sanburg, Greg Butts (Kalispell Office), Craig Pagel, Ryan Leland, Jim Melstad (Section Supervisor). Not pictured are Jerry Burns and Cookie Coats (Billings Office).

REFLECTIONS IN THE RIPPLES

by Bill Bahr

Montana on My Mind

In the six years I have worked at the Department of Environmental Quality (DEQ), I have helped provide technical assistance and public education to communities to ensure their public facilities provide the treatment necessary to protect the health of Montanans and preserve the high quality of Montana's environment. I have worked with many water and wastewater operators and visited a large number of wastewater systems. The systems range from the smallest single-cell lagoons to large complex mechanical plants. Communities face similar problems, yet have unique situations, while operators and managers bring varying levels of professionalism to the operation of their wastewater treatment facilities. Community funding and resources for adequate treatment facilities and effective plant operation seem to be the most common concern. Obviously, there is no "one size fits all" answer and each community develops its own philosophy and solutions to public infrastructure needs. Some communities have serious financial problems and others, while financially viable, provide minimal support for water and wastewater systems. Additionally, it is difficult to summarize the wide range of treatment staff abilities, knowledge and level of commitment. All communities, large and small, develop unique personalities and the resultant communication throughout the public utility entity is reflected in each. I have had many opportunities to help improve some of these situations. DEQ staff have been successful in many instances in helping communities satisfy the intent of the Montana Water Quality Act to protect and preserve the quality of our state waters. The following segments illustrate some wastewater treatment plant improvements that may be valuable to you as you provide for the treatment of wastewater in your corner of the state.

Biological Nutrient Removal Retrofit

The City of Hamilton is retrofitting its existing facility rather than constructing a new treatment plant. This is a growing trend across the nation because of cost savings and limited space for enlarging the current plant sites. Hamilton, like many western Montana communities, has grown in population and is reaching the limits of treatment that the plant can provide. New standards relating to non-degradation and nutrient load limits have had a significant impact on the decision of Hamilton officials to provide a better level of treatment. Phosphorous and nitrogen compounds are nutrient sources that are linked to declining water quality in the Bitterroot and Clark Fork Rivers primarily because they promote excessive algal growth. Large amounts of algae negatively impact water quality criteria, limiting the ability fish and other aquatic species to survive, reproduce and thrive. The Hamilton WWTP needed provide a higher level of treatment, reducing levels of pollutants in the discharge in order to meet discharge permit standards. The existing facility is an oxidation ditch wastewater treatment plant. It uses an extended aeration activated sludge process to achieve secondary treatment standards. Oxidation ditches are what they sound like; the biological mass is held in a large concrete ditch that is constructed in the form of an oval racetrack. Aeration and mixing are provided by either surface paddle rotors that stir the surface of the ditch and move the biological mass around the ditch, or by diffused aeration and subsurface mixers.

The recent upgrade makes use of microbiological species in the wastewater mass that convert the forms of nitrogen from ammonia to nitrite/nitrate through nitrification, and then to nitrogen gas through denitrification. The design change at the Hamilton WWTP creates zones in the ditch that are anaerobic.

Anaerobic zones contain no or low concentrations of free dissolved oxygen. Dentrifying bacteria utilize the chemically bound oxygen in the nitrite and nitrate compounds for respiration and growth. Nitrogen gas is released to the atmosphere. Biological nutrient removal (BNR) processes can also be used to remove phosphorous in WWTP effluents. The surface rotors were replaced with subsurface mixers and diffused aeration. Separation of the aeration and mixing equipment allows the operators to control dissolved oxygen levels while maintaining the mixing necessary for treatment. Oxidation ditches seem to be especially suited for this type of modification since they have the long detention times necessary for the growth of nitrifying and denitrifying bacteria.

Meeting Ammonia Toxicity and Chlorine Residual Levels

The Vaughn lagoon system has been upgraded to meet more stringent permit limits and address facility permit violations for BOD, TSS and fecal coliform. Additionally, evaluations of permit data indicated plant discharges would exceed new limits for chlorine residual and ammonia nitrogen as well. The lagoon cells were redesigned and lined and aging equipment was replaced to prevent leakage and provide better treatment. The Vaughn facility was also permitted to change its discharge point from a small backwater to the nearby Sun River. The toxicity issues related to ammonia nitrogen and chlorine residual are more relaxed in the larger flows of the Sun River. Oxidation of ammonia uses nitrifying bacteria to convert ammonia to nitrite/nitrate nitrogen and this biological process is severely retarded by cold temperatures. Wastewater temperature in lagoons approaches ambient temperature, often freezing over during winter months, resulting in incomplete ammonia oxidation during cold weather. Discharge to the larger receiving water will enable the Vaughn system to meet permit levels because concentrations of ammonia in the river are diluted to levels that are not toxic to aquatic life within the mixing zone. The longer discharge pipe from the lagoons to the Sun River allows the chlorine to dissipate prior to entering the receiving waters. The toxicity of chlorine to aquatic life is also reduced by mixing in the larger flows in the Sun River.

Removing a Long-time Pollutant Source

The Cascade community addressed a significant pollution problem in their watershed by constructing an entirely new lagoon system that beneficially uses the treated wastewater effluent for agronomic purposes. The old two-cell lagoon was located on an island in the Missouri river and leaked excessively. The new lagoon system is located away from the river on nearby agricultural land. The wastewater will be pumped to the lagoon site where biological treatment will take place in the first cell. The treated wastewater will be stored in the second cell and applied at appropriate agronomic rates during the growing season to meet plant nutrient needs. Beneficial use systems are becoming preferred alternatives for smaller communities as they attempt to provide better treatment for increasing population flows and other nutrient loading issues. State waters in various watersheds throughout the state are increasingly impacted as communities grow and aging wastewater treatment systems fail. Beneficial use of treated wastewater is a highly effective method of dealing with the pollutants in discharge streams. Non-discharging systems avoid the necessity of either applying better, more costly and more complex treatment technologies to reduce pollutants in the discharge and/or receiving a discharge permit for new or increased sources of pollutants. In these systems, the discharges are applied at levels not considered to reach ground water eliminating the need for a ground water permit.

7TH ANNUAL SPRING WATER SCHOOL FOR SMALL SYSTEMS

by Barb Coffman, METC Training Specialist

The Montana Environmental Training Center (METC) will hold its **7th Annual Spring Water School for Small Systems** on March 17 - 19, 1999 at the Holiday Inn Billings Plaza (5500 Midland Road) in Billings.

The annual two-and-one-half day seminar is designed for both entry-level and experienced water and wastewater operators and managers. Topics and presentations will specifically target **SMALL** systems, which are class 3, 4, and 5 water operators and class 3 and 4 wastewater operators. This includes operators of Nontransient Noncommunity systems. (Advanced surface water operators and advanced wastewater operators are encouraged to attend other seminars better designed to meet their needs.) The school will feature an array of topics, including wells and lagoons, process control of water treatment facilities and wastewater treatment facilities, distribution system operation and maintenance, and wastewater collection system operation and maintenance. Preventive maintenance, safety, and current regulations are just a few of the topics that will be covered.

This school is not to prepare operators for the Certification Exam. However, a Basic Training Track will be offered for those planning to take exams on **Saturday, March 20, 1999** following the Spring School. The "Basic Training Track" is designed to help operators "**brush up**" on materials they have been studying for the exams. It will cover math formulas, geometry, hydraulics, loading rates, lagoons and mechanical systems, and concentration and chemical feed problems. **PLEASE NOTE:** No CECs will be offered for the Basic Training Track. Prior arrangements must be made with the Department of Environmental Quality (DEQ) Certification Office, Shirley Quick, to take any exams on Saturday (406-444-2691). Anyone planning to take an exam must have (1) completed an application for certification as a water/wastewater operator, (2) paid application (or renewal) fees for fiscal year 1999, which ends June 30, 2000, and (3) submitted examination registration slips and fees of \$20 per exam by **March 5, 1999 (No Exceptions)**.

A block of sleeping rooms for the nights of March 16, 17, 18, and 19 have been reserved at the Holiday Inn Billings Plaza. The beginning rate is \$57.00 per night for single or double sleeping rooms. Call direct to reserve your room, (406)248-7701, and reference "Montana Environmental Training Center" to receive the special rate. This block of rooms will only be held until March 2, 1999, two weeks prior to the Spring Water School. **Make your reservations early!**

Please watch your mail in early February for an METC brochure announcement containing more specific information and a registration form for the Spring Water School or contact METC at (406)454-2728. Hope to see you there!

DEQ DEVELOPS NEW SOURCE WATER ASSESSMENT PROGRAM

The Montana Department of Environmental Quality (DEQ) conducted a series of public meetings across Montana to discuss certain changes in the Federal Safe Drinking Water Act (FSDWA), requiring the development of the Montana Source Water Assessment Program. This program, submitted to U.S. Environmental Protection Agency (EPA), in January 1999 for review and approval, will help water suppliers identify potential contaminant sources and allow them to become proactive in managing those sources.

At the meetings, the department asked the public to comment on the new program before the state submitted its program to the EPA for review and approval. Four evening meetings were held in Kalispell, Billings, Wolf Point, and Great Falls. The evening meetings were in an open house format and relatively well attended at all locations.

The changes in the FSDWA has requirements affecting all Montanans who utilize a public water system. In part, this Federal mandate requires DEQ to develop a program built on the existing wellhead protection program to assess water sources used by public water supplies.

Joe Meek, supervisor of the Source Water Protection Section at DEQ, says that, generally, these revisions will be good news for the consumer and PWS operators, but some people might be uneasy about the changes.

“Certain businesses, industry, or agricultural interests might be concerned about being labeled as a potential contaminant source,” Meek said. “Labels don’t make or change what’s happening on the land. This program’s goal is to educate folks who see themselves on different sides of the issue.”

Meek believes that people generally see high quality drinking water as common ground. Meek, who recently received the “Friends of Rural Water Award” by The Montana Rural Water Systems, believes the new program will help all water users, from those who drink it to those who discharge into it.

A common scenario in small communities across Montana unfolds when contamination surfaces in the local public water system. Typically, contamination is reported to the water system operator by the lab several days after the initial sample is submitted. Consumers are then left to wonder whether the contamination event may have already come and gone or, worse, was there long before anyone knew about it.

For example, areas with high septic system densities near a public well might be identified as creating a significant risk and, ultimately, lead to the installation of public sewers. According to Meek, the new Source Water Assessment Program will identify these areas. The local communities will be asked to develop management strategies for dealing with the problems. “It’s a good example of how government can work for the people, with the state providing information upon which the local community can act,” Meek said.

If you’d like to see the program description you can visit the Montanan Source Water Protection Internet site at <http://water.montana.edu/swp> or you can obtain a paper copy of the document by contacting Joe Meek at DEQ at (406)444-4806.

IS YOUR SYSTEM READY FOR RISK MANAGEMENT?

Does This Apply to Me?

Under a new Environmental Protection Agency (EPA) chemical accident prevention rule, some operators of water treatment systems will have to implement a risk management program and file a risk management plan (RMP) by **June 21, 1999**. If you handle, store, or use any of the following above the threshold quantities, you are likely to be subject to this rule:

<u>Chemical</u>	<u>Threshold Quantity</u>
Chlorine	2,500 pounds
Anhydrous ammonia	10,000 pounds
Aqueous ammonia (concentration 20% or greater)	20,000 pounds
Chlorine dioxide	1,000 pounds

If you have other chemicals at your facility, you can get a complete list of substances regulated under this rule and their thresholds from EPA.

What Is Risk Management All about?

The risk management program rule (also known as Clear Air Act section 112(r), the RMP rule, or part 68) is designed to prevent serious chemical accidents that could affect public health and the environment and to improve the response to any accidents that do occur.

The rule requires covered facilities to develop and to implement an integrated system to identify hazards and manage risks. If you are subject to this rule, you must analyze worst-case releases, document a five-year history of serious accidents, coordinate with local emergency responders, and file a risk management plan with EPA. If your worst-case release could affect the public, you also must analyze more realistic alternative scenarios and develop and implement a prevention program that includes, among other steps, identification of hazards, written operating procedures, training, maintenance, and accident investigation. If your employees respond to accidental releases, you must implement an emergency response program. The RMP you submit to EPA will summarize your program and will have to be made available to the public.

Compliance Tips

The good news is that many water treatment system operators already are complying with many of the prevention requirements because these steps are part of the way you operate safely. If you are subject to the OSHA Process Safety Management Standard under Federal or State law, you are likely to be in compliance with almost all of the prevention program requirements and may need to take no other steps to satisfy this part of EPA's rule. If you already have an emergency response plan, you are likely to be in compliance with that part of EPA's rule as well.

Besides helping you prevent accidents, the rule can improve the efficiency of your operation by ensuring that your workers are trained in proper procedures and by using preventive maintenance to reduce equipment breakdowns.

The American Water Works Association (AWWA) is developing a guidance document specifically for operators of water treatment systems that will help you understand the requirements as they relate to your operations. The water treatment system guidance will make compliance less burdensome by providing industry-specific information and analyses.

MSAWWA & MWEA
1999 Joint Annual Conference
"Stewardship of Public Health and the Environment"
April 28-30, 1999
Holiday Inn, Billings, Montana

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Registration

Preconference - April 28

includes all preconference sessions and lunch

Members \$50 - Nonmembers \$80 \$ _____

Conference - April 29-30 *(fee does not include Preconference)*

includes all conference sessions, two lunches, banquet and entertainment

Members	postmarked before March 15	\$110	
	postmarked March 16 or after	\$130	
	life members	\$60	\$ _____

Nonmembers*	postmarked before March 15	\$140	
	postmarked March 16 or after	\$160	\$ _____

*If you'd like to join one or both of these associations, please call 406-443-5388 for information and applications. You can then register at the member rate.

Companions	\$35	\$ _____
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includes companion program and Thursday banquet

Students	\$25	\$ _____
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includes conference sessions and lunches

Each additional lunch ticket (indicate number)	\$15	_____ tickets @ \$15 each	\$ _____
Each additional banquet ticket (indicate number)	\$30	_____ tickets @ \$30 each	\$ _____

Total amount of registration \$ _____

All registrations postmarked by March 15 are eligible for the Early Bird Prize Drawing.

Continuing education credits are offered for attendance at the conference. You'll receive information in your registration packet when you check in.

Make checks payable to MSAWWA/MWEA.

Mail this registration and your check to:

MSAWWA/MWEA Annual Conference
505 South Roberts
Helena, MT 59601
For further information, call 406-443-5388
Fax 406-443-5656

☐ **Golf!**

Check here if you'd like to play golf on Wednesday afternoon, April 28 (weather and interest permitting).

Name (as you'd like it on your badge) _____
(First) (MI) (Last)

Member # _____ Title _____

Organization _____

Mailing address _____

Phone _____ (City) Fax _____ Email _____ (State) (Zip)

Companion name _____
(First) (Last)

Construction worker buried alive, stays alive by creating air pocket

By RACHEL ZOLL
Associated Press Writer

CHATTANOOGA, Tenn. — A construction worker buried alive in a trench collapse Monday managed to create an air pocket 5 feet underground that rescue workers pumped oxygen into during the four hours it took to expose his head and face.

The rescue effort continued into the night as workers battled against soft soil that slid back into the hole almost as fast as it was dug out. The pit had to be shored up like a mine shaft to prevent another collapse, slowing the excavation process.

The 26-year-old construction worker was on the side of the 12- to 15-foot-deep trench, where sewer piping was being laid, when the walls collapsed. Using a bucket, or adjacent pipe, or both, the worker created an air pocket, according to Bill Tittle, spokesman for Hamilton County Emergency Services.

Rescuers who arrived minutes later heard moans and cries for help. They pumped oxygen into the space, allowing the trapped man to keep breathing. He was conscious when his head was exposed four hours later and immediately asked rescuers to call his wife, who was contacted and



AP photo

Rescue workers help rescue a 26-year-old construction worker from Kingsport, Tenn., who was buried when a trench being dug along a highway caved in Monday in Chattanooga, Tenn. After about four hours, the man's face and head were uncovered, and he was conscious.

brought to the scene, Tittle said.

"When we first got down here we thought there was no way we could get him out," said Tittle, who marveled that the man got enough air to survive in the minutes immediately after the accident.

"He's a tough individual," Tittle said. "We're trying to give him every chance we can."

After nightfall, rescuers expect-

ed it would take several more hours to free the man, who apparently suffered a serious back injury, Tittle said.

There was concern the man would go into shock as rescuers sought to free him, Tittle said. It also was feared he would suffer hypothermia in the cold dirt, so hot air was pumped into the mound that covered him.

Look what's new in 1999 ...

From the Montana University System

WATER CENTER

Montana Water

Monday, December 20, 1998 Good Morning!

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- Ground Water Manual
- Source Water Protection
- Training Calendar
- Volunteer Monitoring
- Watercourse & Project WET

Partnership Programs

- Drinking Water (D/WAP)
- EPA Drinking Water Network
- Local Water Quality Districts
- Septic System Pollution Studies
- Water Resources Grants (NRSS)
- Whirling Disease

Montana Watersheds

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- Funding Resources
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We've had 2664 visitors since November 11!

Comments or additions ... wwwrc@montana.edu

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Montana Water

Come visit us at the "Montana Water" Web site!

<http://water.montana.edu>

This interface between the university system and the rest of Montana is providing the water information you need and is now searchable too.

Training for source water protection is available on the Web!

Go to the Montana Source Water Protection Program site and explore the training options.

<http://water.montana.edu/SWP>

Montana Source Water Protection Program

Summary

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Training

EVENTS

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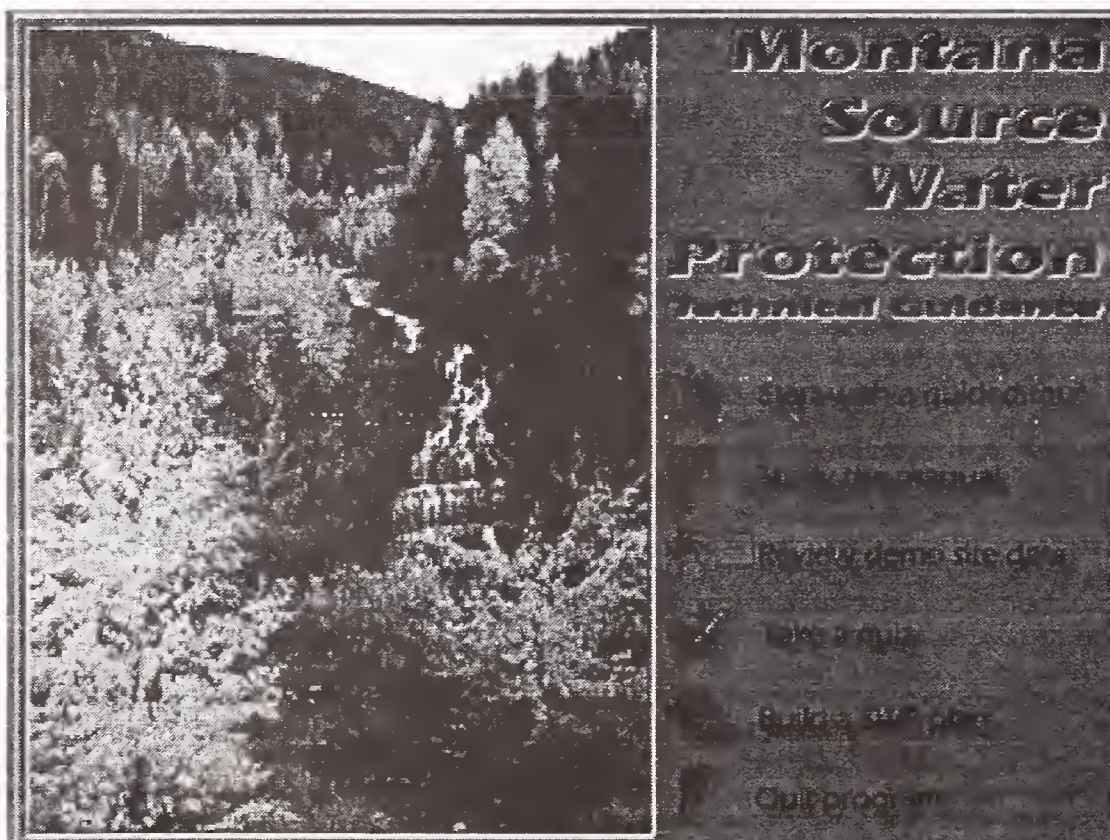
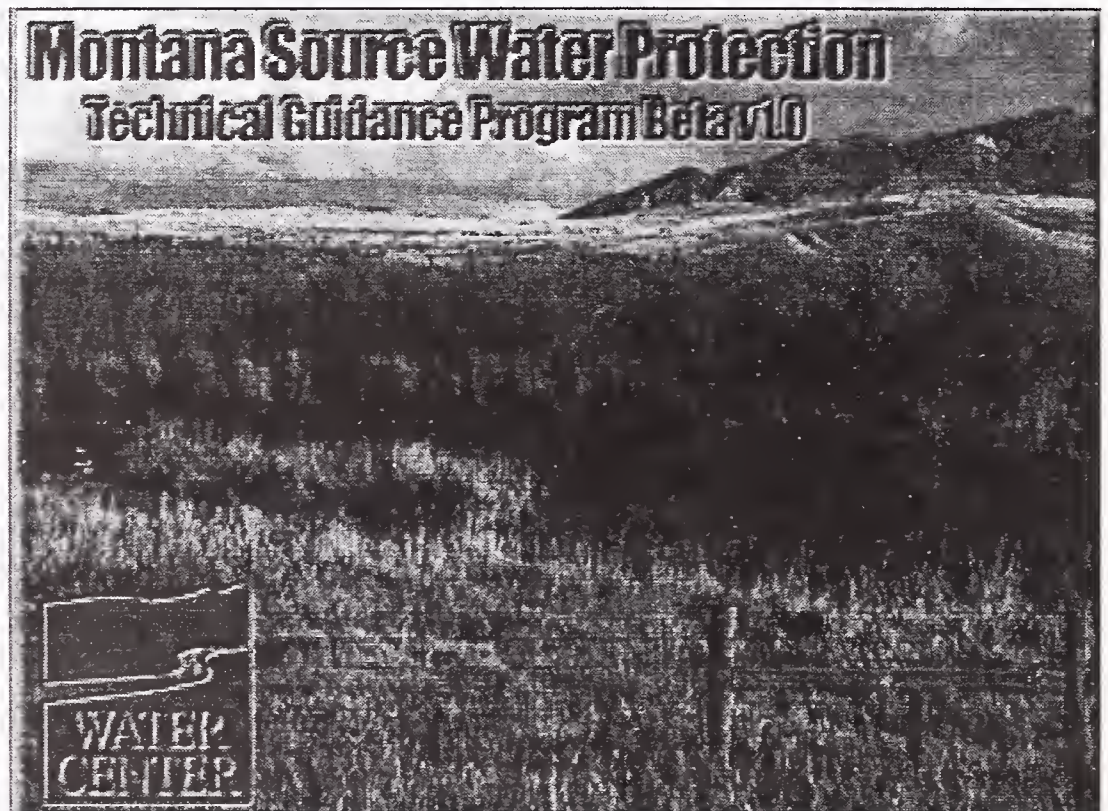


The CD-ROM version of the *Montana Source Water Protection Technical Guidance Manual* can be requested through the Web's "On-line Lending Library" or:

Montana University System Water Center
 101 Huffman Building / MSU
 Bozeman, MT 59717
 (406) 994-6690 (office)
 (406) 994-1774 (FAX)
wwwrc@montana.edu

Montana is required under the 1996 amendments to the federal Safe Drinking Water Act to carry out a Source Water Assessment Program. This program needs the participation of all public water systems in identifying and protecting their water sources.

The purpose of the *Montana Source Water Protection Technical Guidance Manual* is to provide a “cookbook” to assist public water systems in developing a source water protection plan. The hard copy version is also available from our library or the authors (Montana Department of Environmental Quality and Montana Bureau of Mines and Geology.)



The training CD contains all the information from the original manual, plus multimedia components that make the learning process easier and more fun.

You can test your knowledge by taking a quiz.

Once you've mastered the basics, use the template provided to create, save, and update your own plan!

The Ground Water Manual for Small Public Water Systems
by the Montana Department of Environmental Quality (MDEQ)
and South Hills Environmental Consultants is available in hard copy
from our library or MDEQ.

This manual was written with small water systems in mind! It gives operators and managers a good working knowledge of ground water system operation and management.

Each of the eleven chapters in the Ground Water Manual are available as PDF documents on the Montana Water Web site, while the interactive training modules are being produced. <http://water.montana.edu/gw>

Web and CD versions of this manual are planned for completion by the end of July!

For more information, contact Kevin Kundert (kkundert@montana.edu) or 994-7738.

Ground Water Manual for Small Public Water Systems
by the Montana Department of Environmental Quality and South Hills Environmental Consultants, LLP

Montana Water

This manual has recently been completed in hard copy and is now available in PDF format. To view these documents, you must have Adobe Reader installed on your computer.

It is available for free download here [Adobe Reader](#)

Important information for new water operators

Chapter 1: Introduction to Public Water Supplies

- 1.1 What is a Public Water Supply System?
- 1.2 Types of Public Water Supply Systems?
- 1.3 Purpose of Public Water Supply Systems
- 1.4 Operation
 - 1.4.1
 - 1.4.2

Chapter 1: Introduction to Public Water Supplies

1.1 What is a Public Water Supply System?

A public water supply system provides piped water for human consumption to 25 or more service connections or an average of at least 25 individuals each day for at least 60 days each year. The system includes the source water intake (such as a well), treatment, storage, and distribution piping. This definition of a public water supply system was specified by law as part of the federal Safe Drinking Water Act. Human consumption of water includes drinking water and water used for cooking, food preparation, hand washing, bathroom and bathing.

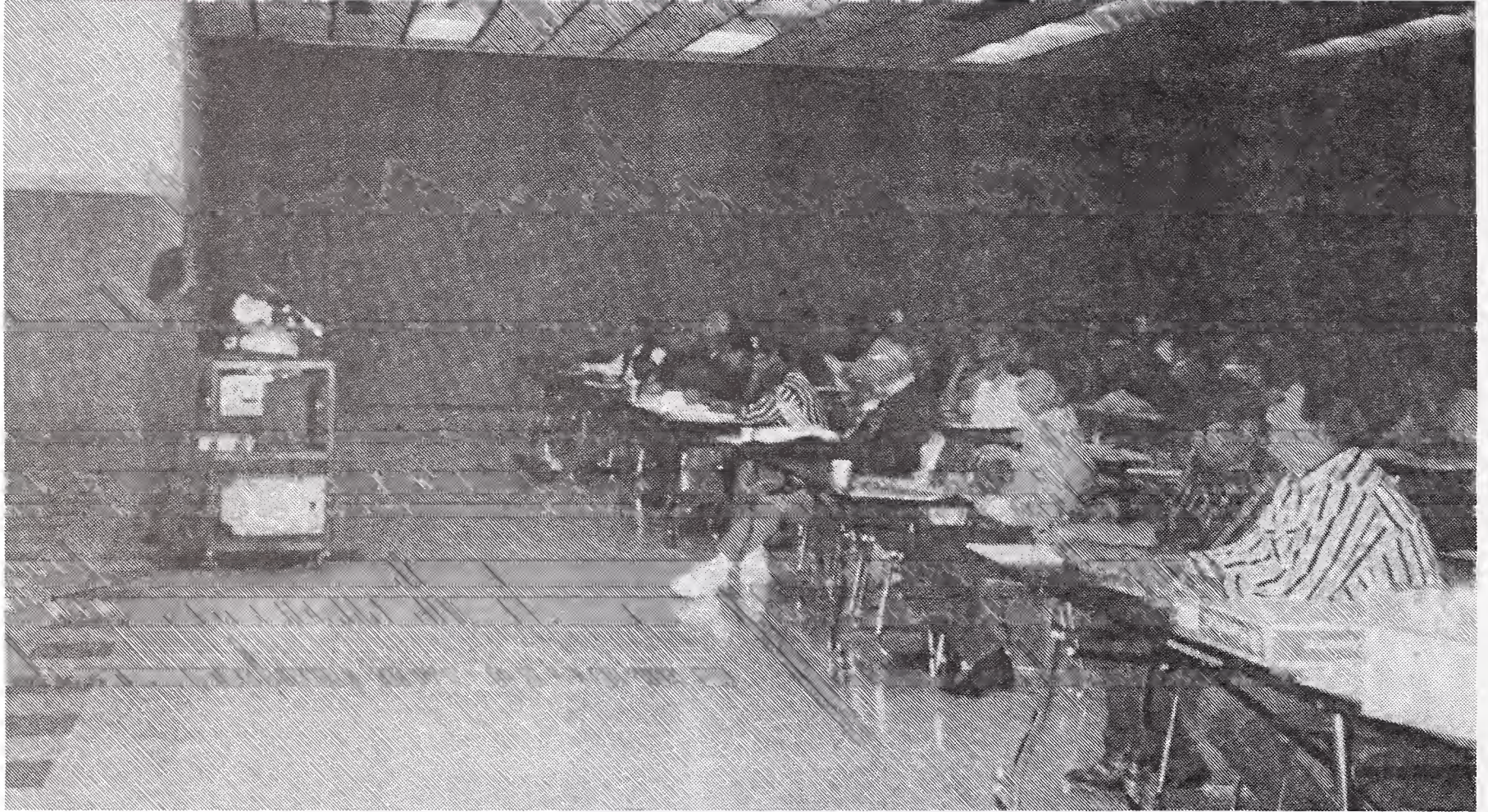
A bar, restaurant or motel served by its own well is usually a public water supply system since it serves an average of 25 or more people each day, even though they may not be the same people every day. Schools and industries that have their own well are also public water supply systems if they have an average of 25 or more people at the facility each day.

A private home served by its own well is not a public water supply system since it

Seasonal establishments such as campgrounds and ski areas are also public water

1998 FALL WATER SCHOOL MEMORIES

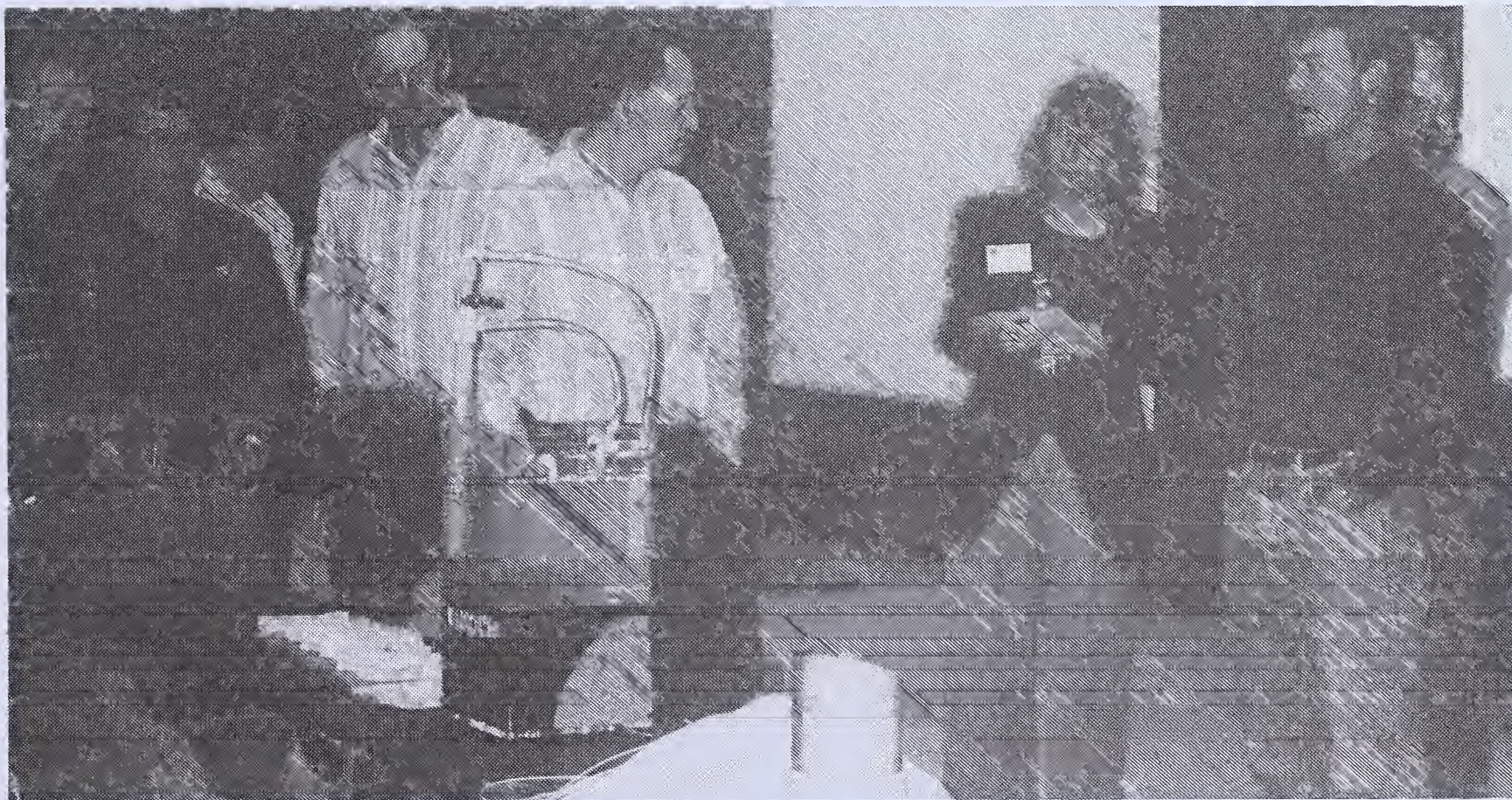
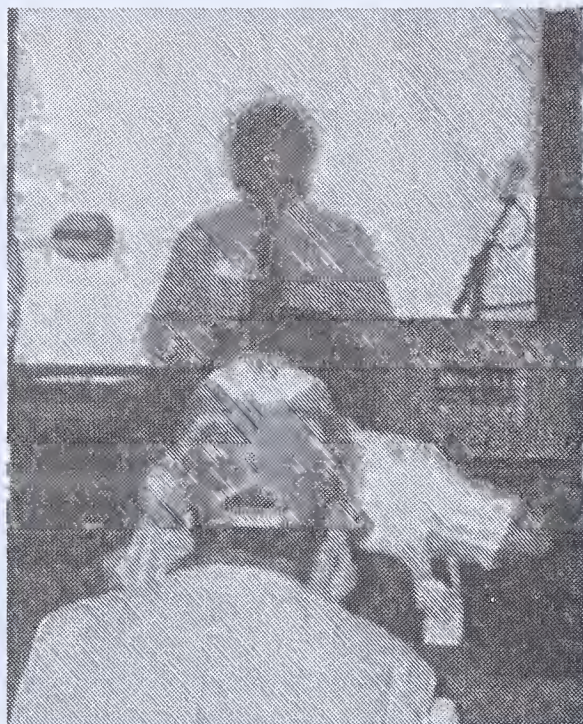
BOZEMAN



Shirley Quick, (above) DEQ Operator Certification Officer, speaks to a group of interested listeners. Over 200 people attended the sessions at the 1998 Fall Water School.



Clif Panish (above) from KOCH Membrane Systems, Inc. answers questions on their new filtration system.



Pictured on this page is Fred Pontius (clockwise from above left), an invited speaker from AWWA, Bill Bahr, speaker from DEQ, and the social hour and vendor show.

Department of Environmental Quality
Planning Prevention & Assistance Division
P.O. Box 200901
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